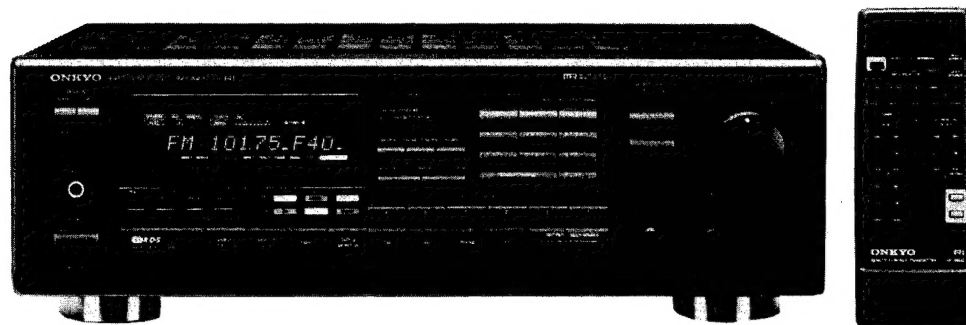


ONKYO SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER

MODEL TX-8510R



Black and Silver models

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK Δ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

AMPLIFIER SECTION

Power Output:

MAIN

70 watts per channel min. RMS. at 8 ohms, both channels driven, from 20Hz to 20,000Hz, with no more than 0.08% total harmonic distortion.

2 × 110 watts at 4 ohms 1 kHz DIN

2 × 80 watts at 8 ohms 1 kHz DIN

REMOTE

15 watts per channel min. RMS. at 8 ohms 1,000Hz with no more than 0.8% total harmonic distortion.

Total Harmonic Distortion: 0.08% at rated power (MAIN)

IM Distortion: 0.08% at rated power (MAIN)

Damping Factor: 60 at 8 ohms

Sensitivity and Impedance: Phono: 2.5mV/50 kohms
CD/Tape Play: 150mV/50 kohms
Tape Rec: 150mV/2.2 kohms

Phono Overload: 120mV RMS. at 1,000 Hz, 0.08 % THD.

Frequency Response: 20 to 30,000 Hz, +/-1 dB

RIAA Deviation: 20 to 20,000 Hz, +/-0.8 dB

Tone Control: BASS: +/-10 dB at 100 Hz

TREBLE: +/-10 dB at 10,000 Hz

Signal to Noise Ratio: PHONO: 80 dB (IHF A, 5mV input)

CD/TAPE: 100 dB (IHF A)

Muting: -∞ dB

VIDEO SECTION

Signal sensitivity and impedance

VDP/VCR normal input, output: 1 V_{p-p}, 75 ohms

TUNER SECTION

FM:

Tuning Range: 87.5 — 108.0MHz (50kHz steps)

Usable Sensitivity: Mono: 11.2dBf, 1.0μV, 75 ohms
0.9μV (S/N 26dB, 40kHz Dev.)
75 ohms DIN
Stereo: 18.0dBf, 2.2μV, 75 ohms
23μV (S/N 46dB, 40kHz Dev.)
75 ohms DIN

50dB Quieting Sensitivity: Mono: 18.0dBf, 2.2μV, 75 ohms

Stereo: 37.2dBf, 20μV, 75 ohms

Capture Ratio: 1.5dB

Image Rejection Ratio: 85dB

IF Rejection Ratio: 90dB

Signal-to-Noise Ratio: Mono: 73dB

Stereo: 67dB

Selectivity: 50dB DIN (±300kHz, 40kHz devi.)

AM Suppression Ratio: 50dB

Harmonic Distortion: Mono: 0.15%

Stereo: 0.25%

Frequency Response: 30 — 15,000Hz ± 1.5dB

Stereo Separation: 45dB at 1kHz

AM:

Tuning Range: 522 — 1611kHz (9kHz steps)

Usable Sensitivity: 30μV

Image Rejection Ratio: 40dB

IF Rejection Ratio: 40dB

Signal-to-Noise Ratio: 40dB

Harmonic Distortion: 0.7%

GENERAL

Power Supply: AC230V, 50Hz

Dimensions (W × H × D): 455 × 150 × 331.5 mm

Weight: 10.4 kg

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1. Replacing the fuses

For continued protection against fire hazard, replace only with same type and same rating fuse.

Circuit no.	Part no.	Description
F902	252076	△3.15A-SE-EAK, Primary fuse
F903	252075	△2.5A-SE-EAK, AC outlet fuse
F911, F912	252078	△5A-SE-EAK, Secondary fuse

2. Change of FM/AM band step

(AM)

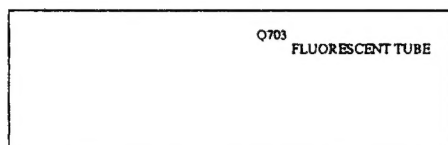
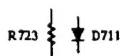
BAND STEP	R723	D711
10kHz→9kHz	Addition	Addition
9kHz→10kHz	Eliminated	Eliminated

In R723 Carbon resistor 10kΩ

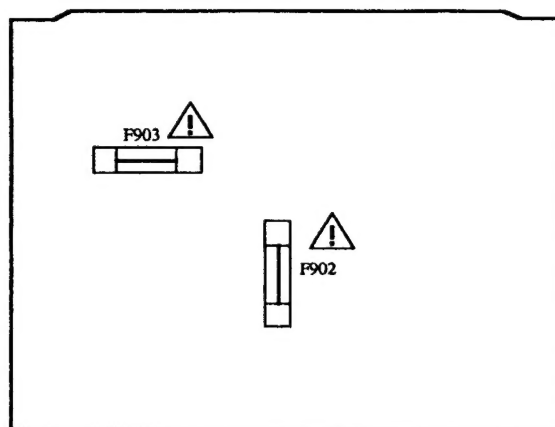
(Part No.417341034) is used.

In D711 Diode 1SS270A

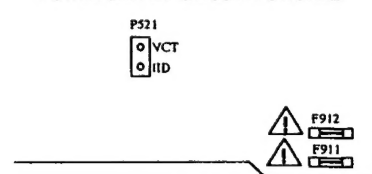
(Part No.223205) is used.



DISPLAY CIRCUIT PC BOARD



POWER SUPPLY CIRCUIT PC BOARD

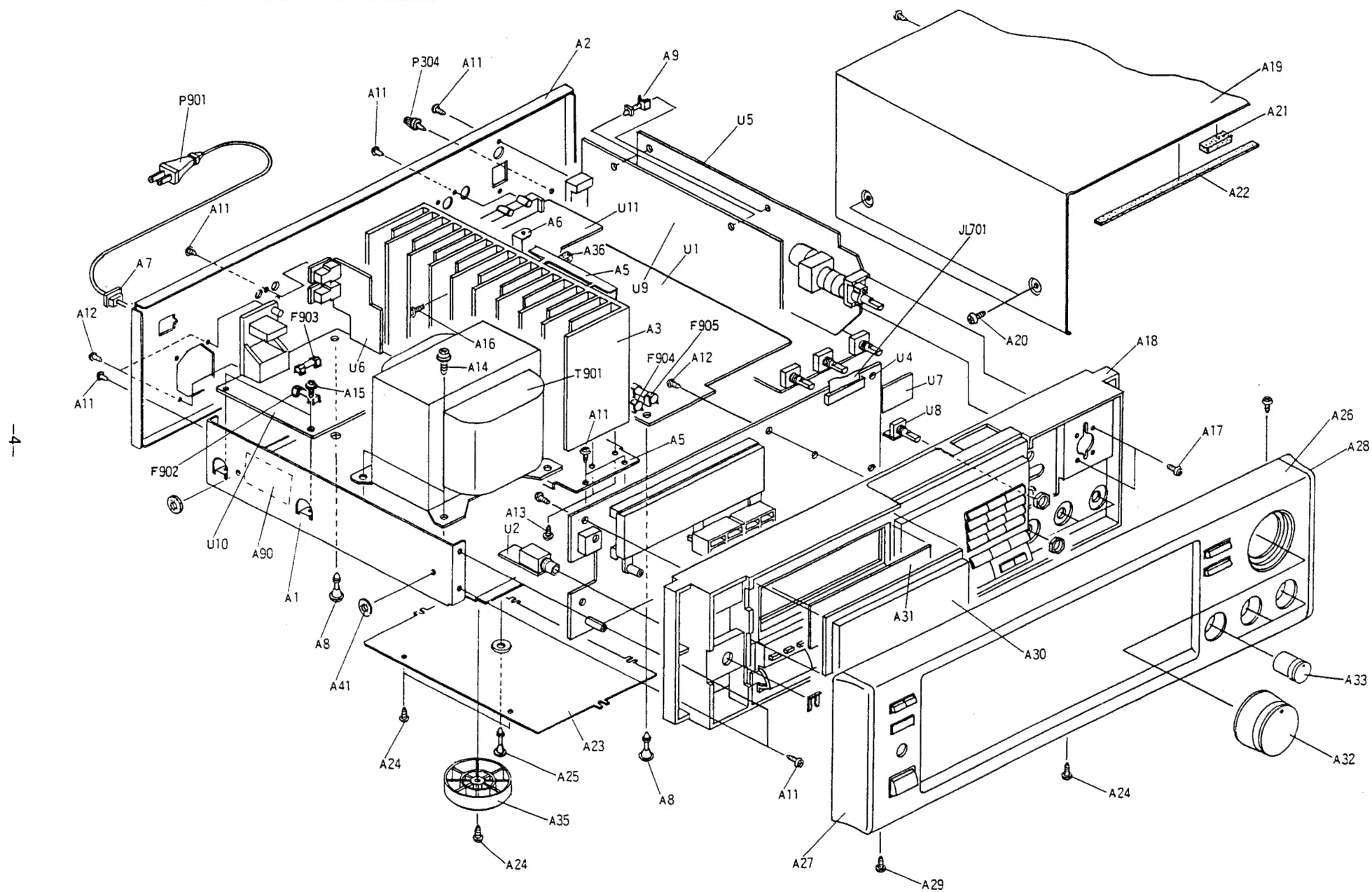


MAIN CIRCUIT PC BOARD

3. Memory preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

CHASSIS-EXPLODED VIEW



CHASSIS EXPLODED VIEW PART LIST

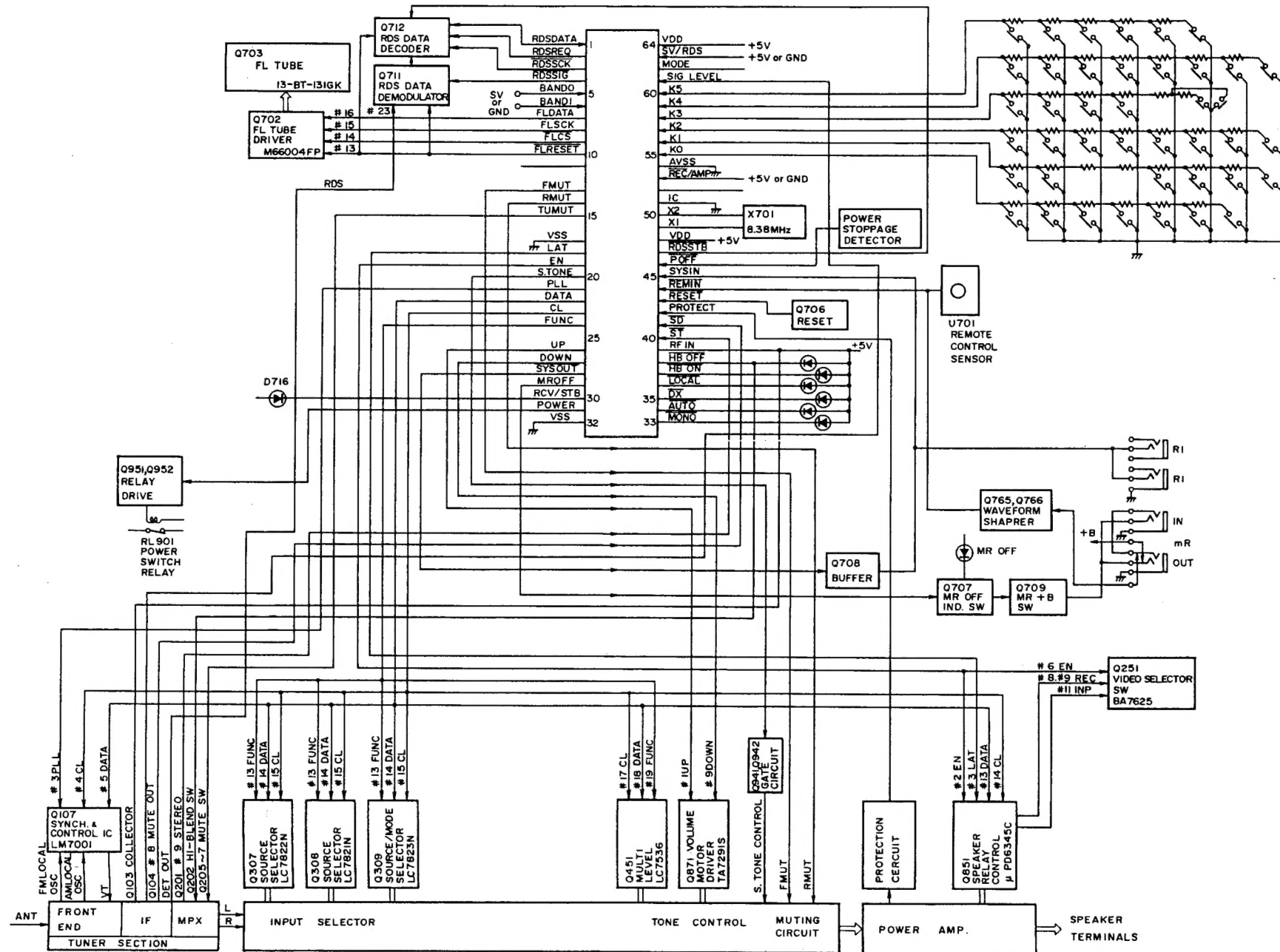
REF.NO.	PART NO.	DESCRIPTION
A1	27100239A	Chassis
A2	27122016Y	Rear panel
A3	27160286A	Radiator
A4	27141474A	Retainer SH
A5	27130653	Retainer H
A6	27141498	Retainer S
A7	27300750	△ Bushing
A8	27190657-1Y	LSR-18R,Holder
A9	27190062	KGLS-12S,Holder
A10	801433	3SMS10W.SW+14B(BC),Sems self-tapping screw
A11	838130088	3TTB+8B,Self-tapping screw
A12	833430080	3TTP+8P(BC),Self-tapping screw
A13	834430108	3TTS+10B(BC),Self-tapping screw
A14	830440089	4TTC+8C(BC),Self-tapping screw
A15	838130088	3TTB+8B,Self-tapping screw
A16	82143015	3P+15FN(BC),Pan head screw
A17	82143006	3P+6FN(BC),Pan head screw
A18	27110761Y	Front bracket ass'y
	27110842Y	Front bracket ass'y <S>
A19	28184476BY	Top cover
A20	838430080	3TTB+8B(BC),Self-tapping screw
A21	28140020	4x10x40,Cushion
A22	28141132	6x60x40,Cushion
A23	27170280A	Bottom panel
A24	838130088	3TTB+8B,Self-tapping screw
A25	27190657-1Y	LSR-18R,Holder
A26	1A570121Y	Front panel ass'y
	1A571121Y	Front panel ass'y <S>
A27	28125234-6	End cap L
	28125234-1Y	End cap L <S>
A28	28125235-6	End cap R
	28125235-1Y	End cap R <S>
A29	838130080	3TTB+8B,Self-tapping screw
A30	28191596A	Clear plate
A31	28133295Y	Back plate
A32	28325002	Knob VOLUME
	28325065	Knob VOLUME <S>
A33	28324376A	Knob TONE
	28325087	Knob TONE <S>
A35	27175300Y	Leg
A36	28140546	0.5 × 390 × 10,Cushion

REF.NO.	PART NO.	DESCRIPTION
F902	252076	△ 3.15A-SE-EAK,Primary fuse
F903	252075	△ 2.5A-SE-EAK,AC outlet fuse
F904,F905	252078	△ 5A-SE-EAK,Secondary fuse
F905b	29360626-1	Rating label, fuse
JL701	2041322010	NCFC1-322010,Flat cable
P304	25060044	Terminal GND
P901	253164Y or 253175Y	△ AS-CEE, △ Power supply cord
Q505,Q506	2201653, 2201654, 2201655, 2202272 or 2202273	2SC3856-O, 2SC3856-Y, 2SC3856-P, 2SC3907-R or 2SC3907-O,Power transistors
Q507,Q508	2201663, 2201664, 2201665, 2202262 or 2202263	2SA1492-O, 2SA1492-Y, 2SA1492-P, 2SA1516-R or 2SA1516-O,Power transistors
T901	2300896Y	△ NPT-1169P,Power transformer
U1	1A428587-8	NAAF-4187-8,Selector and power amplifier pc board ass'y
U2	1A428588-8	NAETC-4188-8,Headphone terminal pc board ass'y
U4	1A428526-1	NADIS-4726-1,Display circuit pc board ass'y
U5	1A428527-1	NAAF-4727-1,Volume circuit pc board ass'y
U6	1A428528-1	NADG-4728-1,RI/MR terminal pc board ass'y
U7	1A428529-1	NASW-4729-1,Operation switch pc board ass'y
U9	1A428559-2	NARF-4659-2,Tuner circuit pc board ass'y
U10	1A428560-2	NAPS-4660-2,Power supply circuit pc board ass'y
U11	1A428561-2	NAAF-4661-2,Video and multi amplifier pc board ass'y

NOTE: :Black model only
<S>:Silver model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK △
ARE CRITICAL FOR RISK OF FIRE AND
ELECTRIC SHOCK. REPLACE ONLY WITH
PART NUMBER SPECIFIED.

MICROPROCESSOR DESCRIPTION



Terminal Description

Pin No.	Function	I/O	Description
1	RDSDATA	I	RDS data input terminal.
2	RDSREQ	O	RDS data request output terminal.
3	RDSSCK	I	RDS clock input terminal.
4	RDSSIG	I	RDS signal input terminal.
5	BAND0	I	Initializing input terminal for FM/AM band region.
6	BAND1	I	Refer to the table on the next page.
7	FLDATA	O	Connect to the terminal SDATA of Fluorescent tube driver M66004FP (Q702).
8	FLSCK	O	Connect to the terminal SCK of Fluorescent tube driver M66004FP.
9	FLCS	O	Connect to the terminal CS of Fluorescent tube driver M66004FP.
10	FLRESET	O	Connect to the terminal RESET of Fluorescent tube driver M66004FP.
11	PLAYER	O	Turntable control output terminal. Not used.
12	CMUT	O	Muting output terminal for the center amplifier. Not used.
13	FMUT	O	Muting output terminal for the front amplifier.
14	RMUT	O	Muting output terminal for the multi amplifier.
15	TUMUT	O	Muting output terminal for the tuner section. Not used.
16	REQ	O	Connect to the terminal REQ of Digital delay. Not used.
17	VSS	-	Ground terminal
18	LAT	O	Connect to the terminal LAT of Output extended IC μ PD6345C (Q851).
19	EN	O	Connect to the terminal EN of Output extended IC μ PD6345C.
20	S.TONE	O	Selective tone control output terminal.
21	PLL	O	Connect to the terminal CE of PLL IC (Q104).
22	DATA	O	Connect to the terminal DI of Analog switches LC7821N, LC7822N, and LC7823N, the terminal DATA of Electro volume LC7536, the terminal DATA of PLL IC LM7001, and the terminal SIN of Output extended IC μ PD6345C.
23	CL	O	Connect to the terminal CL of Analog switches LC7821N, LC7822N, and LC7823N, the terminal CL of Electro volume LC7536, the terminal CL of PLL IC LM7001, and the terminal SCK of Output extended IC μ PD6345C.
24	FUNC	O	Connect to the terminal CE of Analog switches LC7821N, LC7822N, and LC7823N (Q308, Q307 and Q309), and the terminal FUNC of electro volume LC7536.
25	STB	O	Not used.
26	VOLUP	O	Volume UP/DOWN control output terminal.
27	VOLDOWN	O	
28	SYSOUT	O	System code output terminal.

Operation	#27	#26
Stop	H	H
Volume Up	L	H
Volume Down	H	L

Pin No.	Function	I/O	Description
29	MR	O	MULTI ROOM indicator control output terminal.
30	STBY/REC	O	STAND-BY/RECEIVED indicator control output terminal.
31	POWER	O	Power switch relay control output terminal.
32	VSS	-	Ground terminal.
33	MONO	O	MONO indicator control output terminal.
34	AUTO	O	AUTO indicator control output terminal.
35	DX	O	DX indicator control output terminal.
36	LOCAL	O	LOCAL indicator control output terminal.
37	HBON	O	HI-BLEND ON indicator control output terminal.
38	HBOFF	O	HI-BLEND OFF indicator control output terminal.
39	RFIN	I	Detection input terminal for FM antenna input level
40	STEREO	I	Stereo broadcast detection input terminal.
41	SD	I	Broadcast detection input terminal.
42	PROTECT	I	Protection circuit operation detection input terminal.
43	RESET	I	System reset input terminal.
44	REMIN	I	Remote control signal input terminal.
45	SYSIN	I	System code input terminal.
46	POFF	I	Detection input terminal for the stoppage of electric current.
47	RDSSTB	I	RDS strobe input terminal
48	VDD	-	Power supply terminal (+5V).
49	X2	-	Ceramic resonator connection terminal for the main system clock.
50	X1	-	Connect the ceramic resonator 8.38MHz.
51	IC	-	Connect to the ground terminal.
52		-	
53	REC/AMP	I	Initializing input terminal for Receiver or Amplifier.
54	AVSS	-	Ground terminal
55	K0	I	Operation key connection terminal.
56	K1	I	
57	K2	I	
58	K3	I	
59	K4	I	
60	K5	I	
61	SIGLEVEL	I	Signal level input terminal.
62	MODE	I	Initializing input terminal.
63	AVDD	-	Analog power supply terminal of A/D converter.
64	AVREF	-	Reference voltage input terminal of A/D converter.

Initializing Input

#7,#6

BAND1	BAND0	Regin	Band	Frequency Range	Channel Space
0	0	U.S.A.	FM	87.50~108.00MHz	50kHz
			AM	530~1710kHz	10kHz
0	1	Europe	FM	87.50~108.00MHz	50kHz
			AM	530~1710kHz	9kHz
1	0	Worldwide	FM	87.50~108.00MHz	50kHz
			AM	530~1710kHz	9kHz
1	1	Japan	FM	87.50~108.00MHz	100kHz
			AM	530~1710kHz	9kHz

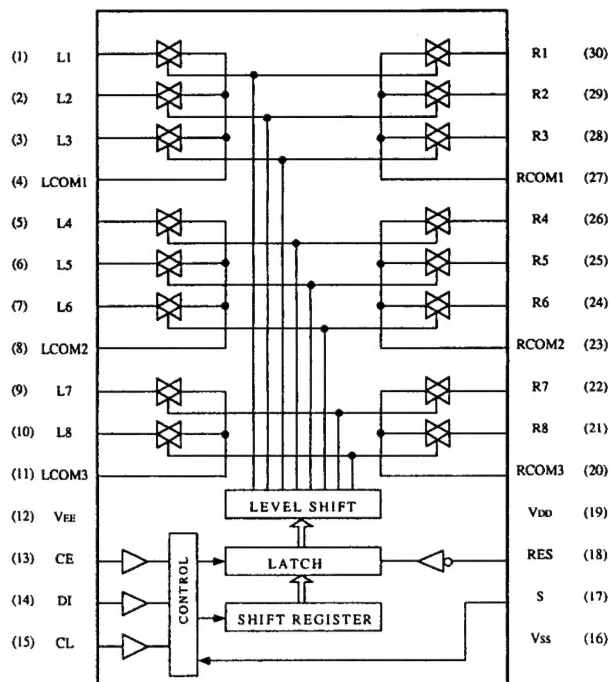
#62

MODE	OPERATION
0	Receiver
1	Amplifier

IC BLOCK DIAGRAMS AND DESCRIPTION

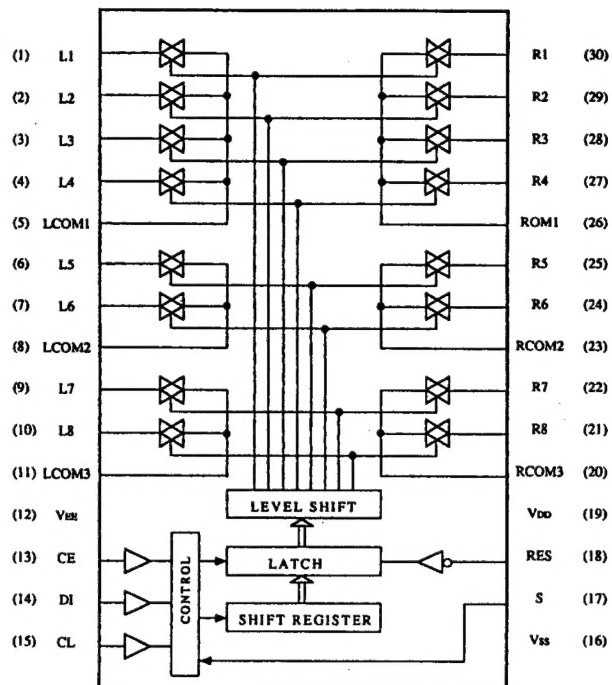
Q307

LC7822N (Analogue switch)



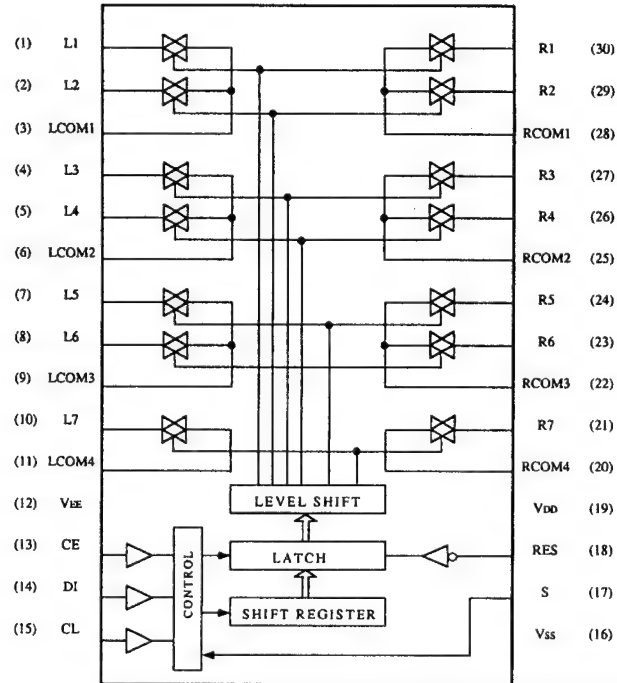
Pin No.	Terminal	Description
1	PHONO'	Input/output terminals of audio signal of left channel for multi source.
2	CD'	
3	TAPE-1'	
4	LCOM1	
5	TAPE-1	Input/output terminals of audio signal of left channel
6	CD	
7	PHONO	
8	LCOM2	
9	SOURCE	Input/output terminals of audio signal of left channel
10	TAPE-2	
11	LCOM3	
12	VEE	Negative power supply terminal (-15V)
13	CE	Chip enable terminal. Connect to the terminal of FUNC of the microprocessor.
14	DI	Serial data input terminal. Connect to the terminal of DATA of the microprocessor.
15	CL	Serial clock input terminal. Connect to the terminal of CLOCK of the microprocessor.
16	VSS	Ground terminal
17	S	Selector terminal
18	RES	Reset terminal
19	VDD	Power supply terminal (+15V)
20	RCOM3	Input/output terminals of audio signal of right channel
21	TAPE-2	
22	SOURCE	
23	RCOM2	Input/output terminals of audio signal of right channel
24	PHONO	
25	CD	
26	TAPE-1	
27	RCOM1	Input/output terminals of audio signal of right channel for multi source.
28	TAPE-1'	
29	CD'	
30	PHONO'	

Q308
LC7821N (Analogue switch)

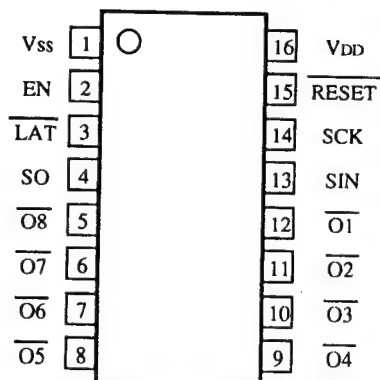


Pin No.	Terminal	Description
1	TAPE-2'	Input/output terminals of audio signal of left channel for multi source.
2	TUNER'	
3	VIDEO-1'	
4	VIDEO-2'	
5	LCOM1	
6	VIDEO-2	Input/output terminals of audio signal of left channel
7	VIDEO-1	
8	LCOM2	
9	TUNER	Input/output terminals of tuner signal of left channel
10	OFF	
11	LCOM3	
12	VEE	Negative power supply terminal (-15V)
13	CE	Chip enable terminal. Connect to the terminal of FUNC of the microprocessor.
14	DI	Serial data input terminal. Connect to the terminal of DATA of the microprocessor.
15	CL	Serial clock input terminal. Connect to the terminal of CLOCK of the microprocessor.
16	VSS	Ground terminal
17	S	Selector terminal
18	RES	Reset terminal
19	VDD	Power supply terminal (+15V)
20	RCOM3	Input/output terminals of tuner signal of right channel
21	OFF	
22	TUNER	
23	RCOM2	Input/output terminals of audio signal of right channel
24	VIDEO-1	
25	VIDEO-2	
26	RCOM1	Input/output terminals of audio signal of right channel for multi source.
27	VIDEO2'	
28	VIDEO-1'	
29	TUNER'	
30	TAPE-2'	

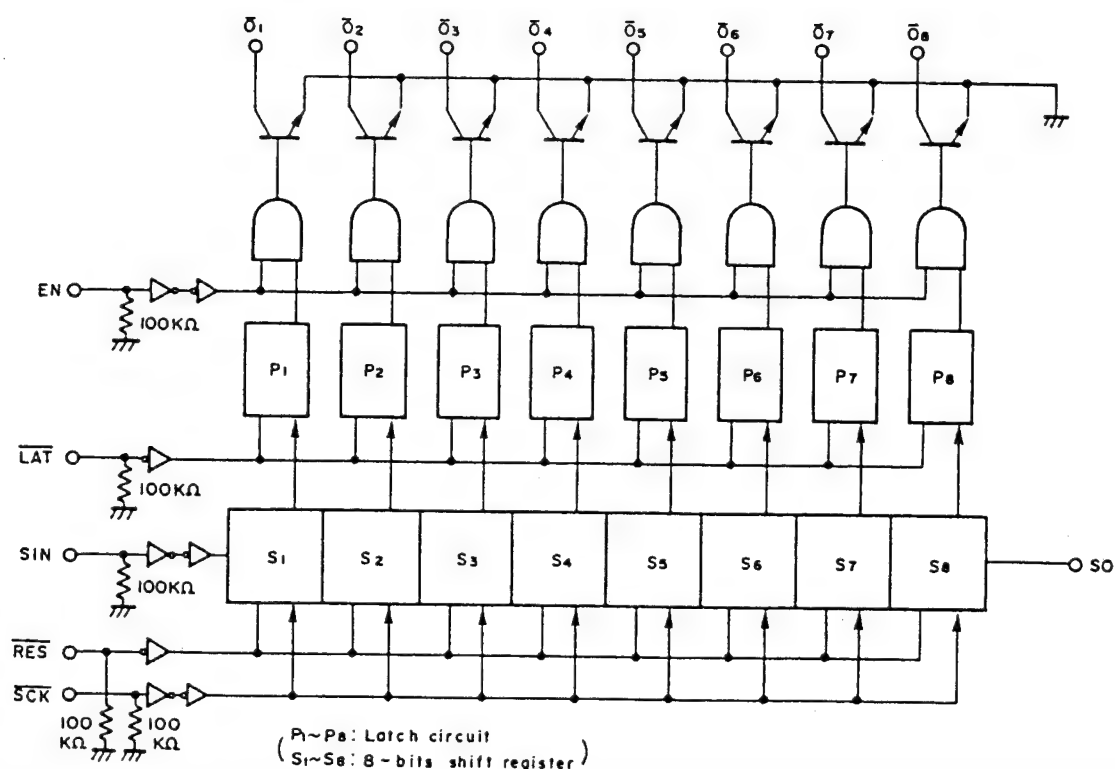
Q309
LC7823N (Analogue switch)



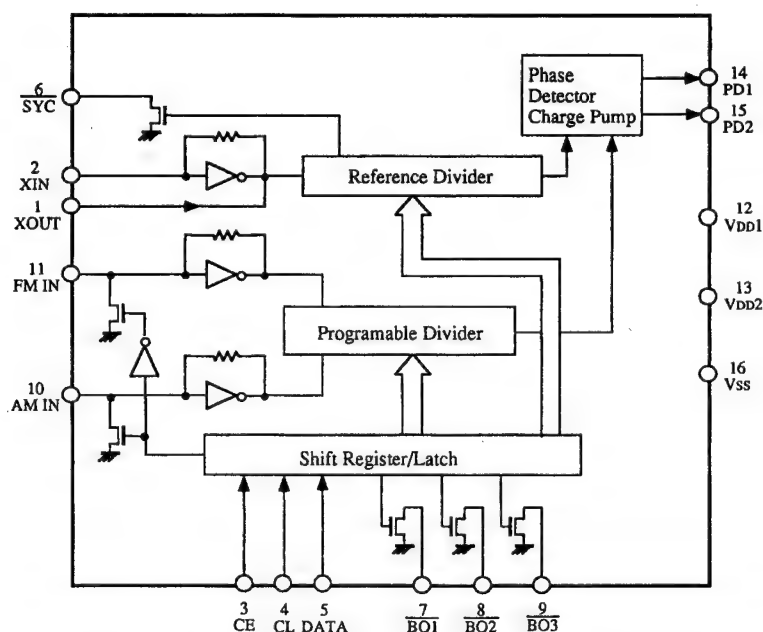
Pin No.	Terminal	Description
1	TAPE-1 REC	Recording input/output terminals of left channel
2	VIDEO-2 OUT	
3	LCOM1	
4	REC	Left signal input/output terminals for recording signal
5	MULTI	
6	LCOM2	
7	DIRECT	Signal input/output terminals of left channel when the source direct switch is turned off.
8	NC	
9	LCOM3	
10	DIRECT	Signal input/output terminals of left channel when the source direct switch is turned on.
11	LCOM4	
12	VEE	Negative power supply terminal (-15V)
13	CE	Chip enable terminal. Connect to the terminal of FUNC of the microprocessor.
14	DI	Serial data input terminal. Connect to the terminal of DATA of the microprocessor.
15	CL	Serial clock input terminal. Connect to the terminal of CLOCK of the microprocessor.
16	VSS	Ground terminal
17	S	Selector terminal
18	RES	Reset terminal
19	VDD	Power supply terminal (+15V)
20	RCOM4	Signal input/output terminals of right channel when the source direct switch is turned on.
21	DIRECT	
22	RCOM3	Signal input/output terminals of right channel when the source direct switch is turned off.
23	NC	
24	DIRECT	
25	RCOM2	Right signal input/output terminals for recording signal
26	MULTI	
27	REC	
28	RCOM1	Recording input/output terminals of right channel
29	VIDEO-2 OUT	
30	TAPE-1 REC	

Q851
μPD6345C (Extended IC)


Pin No.	Symbol	Description
1	V _{SS}	Ground terminal
2	EN	Chip enable input terminal. Connect to the terminal EN of the microprocessor.
3	LAT	Latch input terminal. Connect to the terminal LAT of the microprocessor.
4	SO	Serial data output terminal. Not used.
5	O ₈	Headphone relay control output terminal.
6	O ₇	Remote speaker relay control output terminal.
7	O ₆	Not used.
8	O ₅	Main speaker relay control output terminal.
9	O ₄	Not used.
10	O ₃	Not used.
11	O ₂	Video selector switch control output terminal.
12	O ₁	Video selector switch control output terminal.
13	SIN	Serial data input terminal. Connect to the terminal DATA of the microprocessor.
14	SCK	Serial clock input terminal. Connect to the terminal CLOCK of the microprocessor.
15	RESET	Reset input terminal.
16	V _{DD}	Power supply terminal.



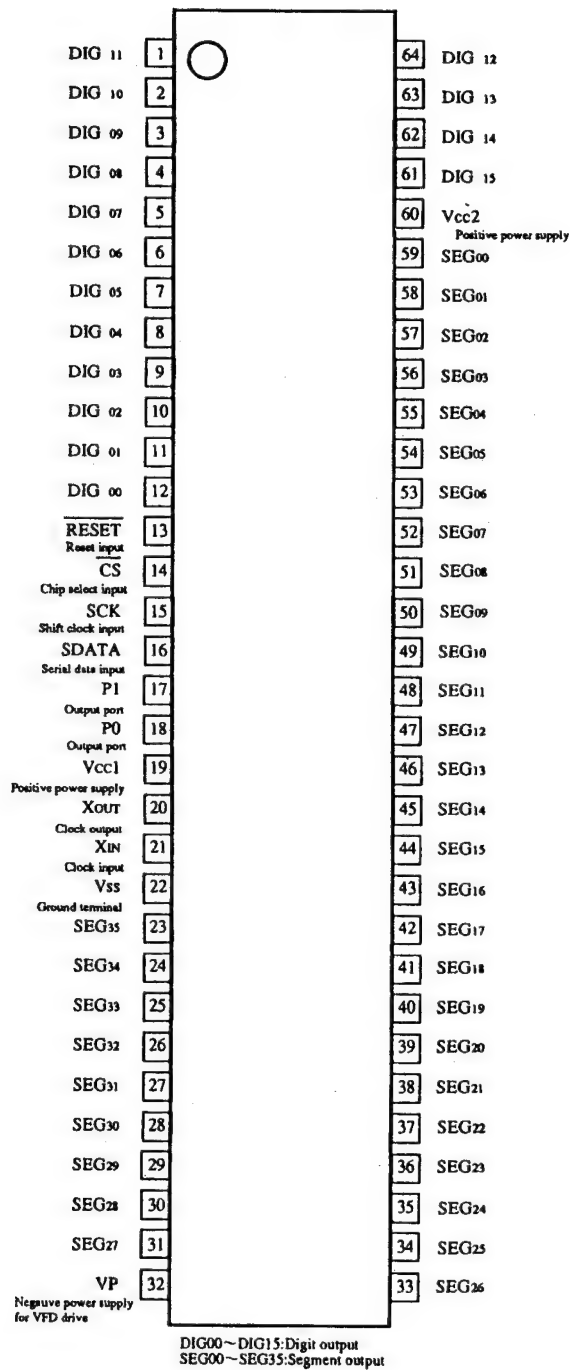
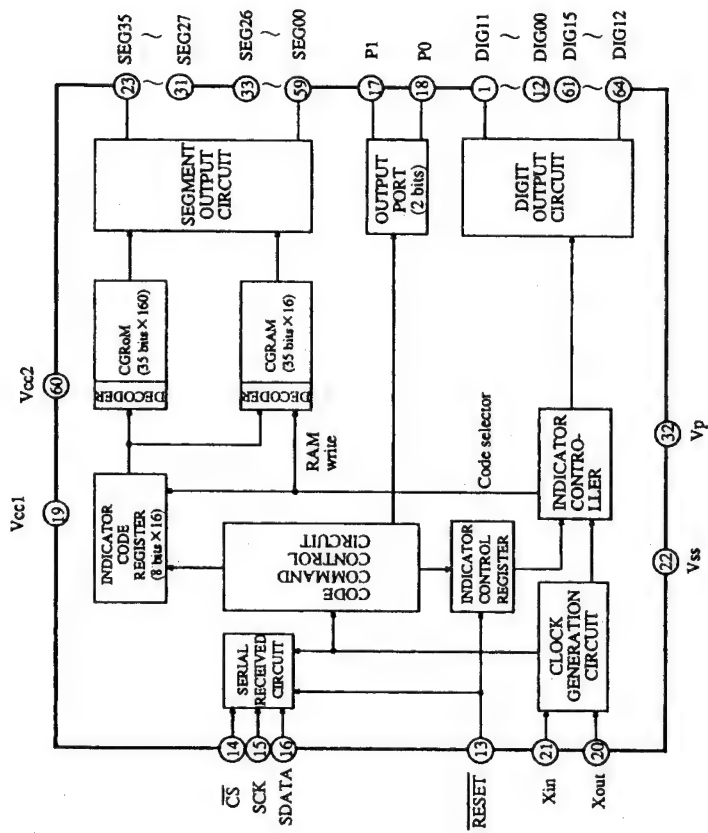
Q107
LM7001 (PLL Synthesizer and Controller)



Pin No.	Terminal	Description
1	XOUT	Connect to the 7.2MHz crystal resonator.
2	XIN	
3	CE	Chip enable terminal. Connect to the PLL terminal of microprocessor.
4	CL	Serial clock input terminal. Connect to the CLOCK terminal of microprocessor.
5	DATA	Serial data input terminal. Connect to the DATA terminal of microprocessor.
6	$\overline{\text{SYN}}$	Not used.
7	$\overline{\text{AUTO/MONO}}$	AUTO/MONO selection output terminal. "L" when AUTO.
8	$\overline{\text{FM}}$	FM band control output terminal. "L" when FM.
9	$\overline{\text{AM}}$	AM band control output terminal. "L" when AM.
10	AMIN	AM local oscillator input terminal.
11	FMIN	FM local oscillator input terminal.
12	VDD1	Power supply terminal for back-up.
13	VDD2	Power supply terminal.
14	PD1	Charge pump output of the phase detector which constitutes the PLL. High level is outputted when the divided local oscillator frequency is high than the reference frequency. In the opposite case, low level is output. Floating occurs when the frequencies matched. The output is applied to the variable capacitor diode in the local oscillator through the low pass filters.
15	PD2	
16	VSS	Ground terminal.

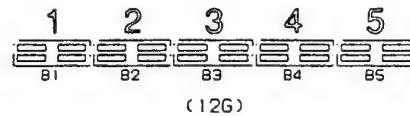
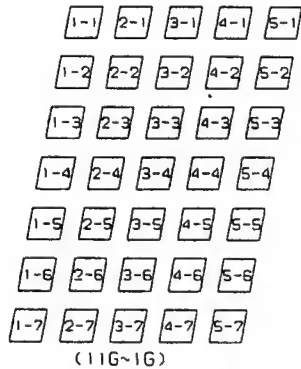
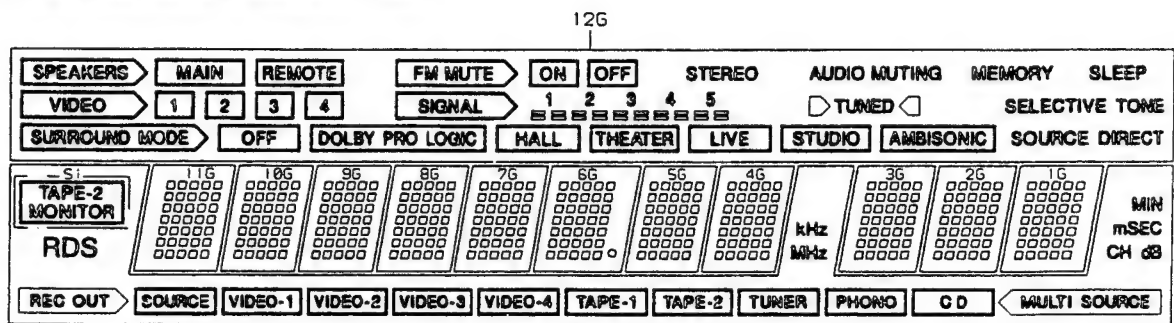
Q702

M6604FP (FL tube Driver)



Q703

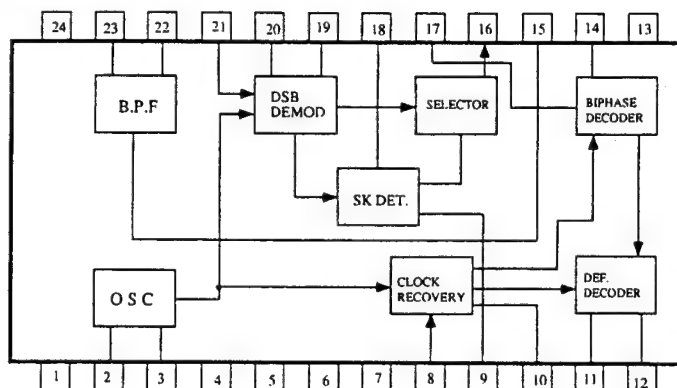
13-BT-131GK (Fluorescent Indicator Tube)



	13G	12G	11G~1G	6G	5G~1G
P1	MIN	SLEEP	1-1	1-1	1-1
P2	ambic	MEMORY	2-1	2-1	2-1
P3	dB	AUDIO MUTING	3-1	3-1	3-1
P4	CH	SELECTIVE TONE	4-1	4-1	4-1
P5	MULTI SOURCE	SOURCE DIRECT	5-1	5-1	5-1
P6	REC OUT	TUNED	1-2	1-2	1-2
P7	SOURCE	STEREO	2-2	2-2	2-2
P8	(SOURCE)	OFF (Center)	3-2	3-2	3-2
P9	VIDEO-1	ON	4-2	4-2	4-2
P10	(VIDEO-1)	FM MUTE	5-2	5-2	5-2
P11	VIDEO-2	AMBISONIC	1-3	1-3	1-3
P12	(VIDEO-2)	STUDIO	2-3	2-3	2-3
P13	VIDEO-3	LIVE	3-3	3-3	3-3
P14	(VIDEO-3)	THEATER	4-3	4-3	4-3
P15	VIDEO-4	HALL	5-3	5-3	5-3
P16	(VIDEO-4)	DOLBY PRO LOGIC	1-4	1-4	1-4
P17	TAPE-1	OFF (LEFT)	2-4	2-4	2-4
P18	(TAPE-1)	SURROUND MODE	3-4	3-4	3-4
P19	TAPE-2	1 2 3 4 5	4-4	4-4	4-4
P20	(TAPE-2)	B5	5-4	5-4	5-4
P21	TUNER	B4	1-5	1-5	1-5
P22	(TUNER)	B3	2-5	2-5	2-5
P23	PHONO	B2	3-5	3-5	3-5
P24	(PHONO)	B1	4-5	4-5	4-5
P25	CD	SIGNAL	5-5	5-5	5-5
P26	(CD)	REMOTE	1-6	1-6	1-6
P27	kHz	MAIN	2-6	2-6	2-6
P28	MHz	SPEAKERS	3-6	3-6	3-6
P29	SI	4	4-6	4-6	4-6
P30	RDS	3	5-6	5-6	5-6
P31		2	1-7	1-7	1-7
P32		1	2-7	2-7	2-7
P33		VIDEO	3-7	3-7	3-7
P34			4-7	4-7	4-7
P35			5-7	5-7	5-7
P36				O	

PIN NO.	64	63	62	61	60	59	58	57
CONNECTION	F2	F2	NP	NP	P36	P35	P34	P33
PIN NO.	56	55	54	53	52	51	50	49
CONNECTION	P32	P31	P30	P29	P28	P27	P26	P25
PIN NO.	48	47	46	45	44	43	42	41
CONNECTION	P24	P23	P22	P21	P20	P19	P18	P17
PIN NO.	40	39	38	37	36	35	34	33
CONNECTION	P16	P15	P14	P13	P12	P11	P10	P9
PIN NO.	32	31	30	29	28	27	26	25
CONNECTION	P8	P7	P6	P5	P4	P3	P2	P1
PIN NO.	24	23	22	21	20	19	18	17
CONNECTION	NC	NC	NC	NC	NC	NC	NC	13G
PIN NO.	16	15	14	13	12	11	10	9
CONNECTION	12G	11G	10G	9G	8G	7G	6G	5G
PIN NO.	8	7	6	5	4	3	2	1
CONNECTION	4G	3G	2G	1G	NP	NP	F1	F1

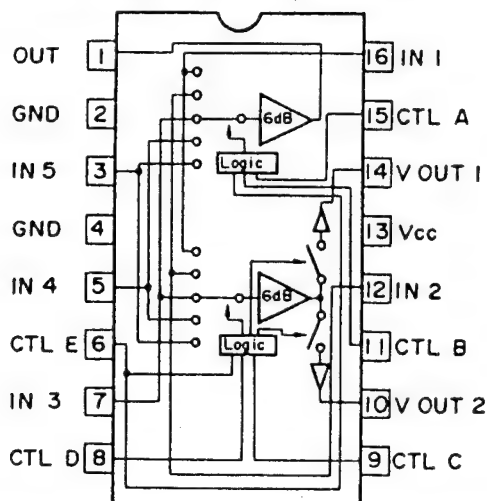
Q711

 μ PD1346CS (RDS Decoder)

No.	Terminal	Description	No.	Terminal	Description
1	Vcc	Supply voltage for the digital circuit	13	GND	Ground for the analog circuit
2	OSC IN	Resonator input	14	INTEG	Integrating filter terminal
3	OSC OUT	Resonator output	15	BPF ADJ	Adjustment fc of band pass filter
4	GND	Ground for the digital circuit	16	PSK OUT	Biphase signal output
5	TEST1	Test input	17	PSK IN	Biphase decoder input
6	TEST2	Test input	18	LPF SK	Low pass filter for the detection SK
7	OP.CTL	Control input of the operation stop	19	LPF Q	Low pass filter for the crossed detector
8	S/L CTL	Mode control input of the synchronizing detection	20	LPF I	Low pass filter for the synchronizing detector
9	SK OUT	SK detection output	21	DSB IN	DSB demodulator circuit input
10	RDS OUT	RDS synchronizing detection output	22	BPF OUT	Band pass filter output
11	CLOCK OUT	Bit rate clock output	23	BPF IN	Band pass filter input
12	DATA OUT	RDS data output	24	Vcc	Supply voltage for analog circuit

Q251

BA7625 (Video Selector Switch)



#15	#11	#6	#1
A	B	E	MONITOR OUT
L	L	X	IN1
H	L	X	IN2
L	H	X	IN3
H	H	L	IN4
H	H	H	IN5

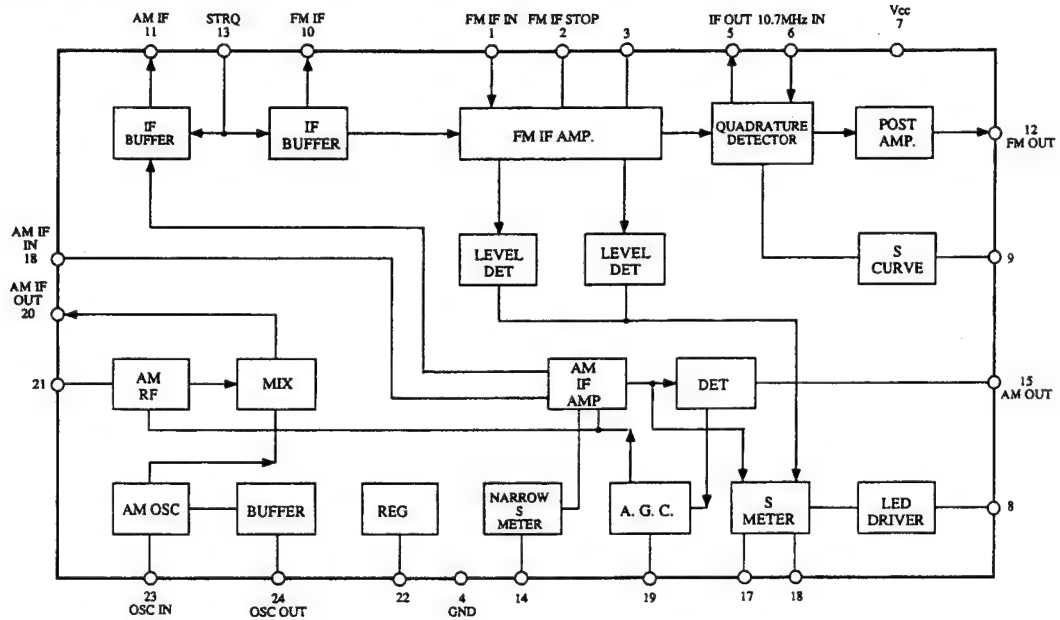
X: Don't care

#9	#8	#6	#14
C	D	E	VOU T 1
L	L	X	
H	L	X	IN2
L	H	X	IN3
H	H	L	IN4
H	H	H	IN5

#15	#11	#6	#10
A	B	E	VOU T 2
L	L	X	IN1
H	L	X	
L	H	X	IN3
H	H	L	IN4
H	H	H	IN5

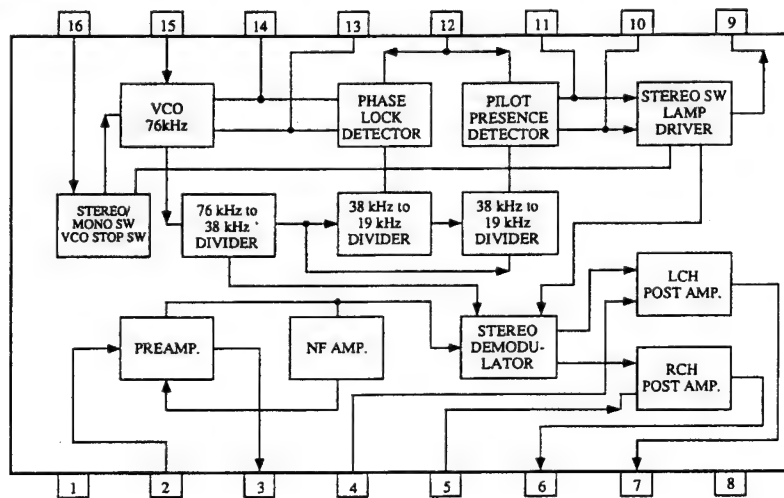
Q104

LA1266 (FM IF and AM Radio System)



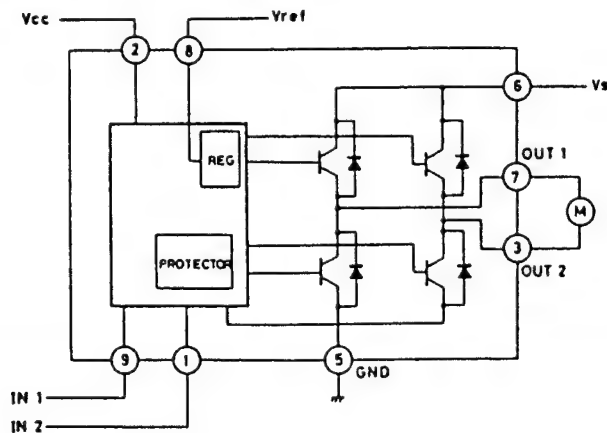
Q201

AN7470 (FM Stereo Decoder)



Q871

TA7291S (Volume driver)

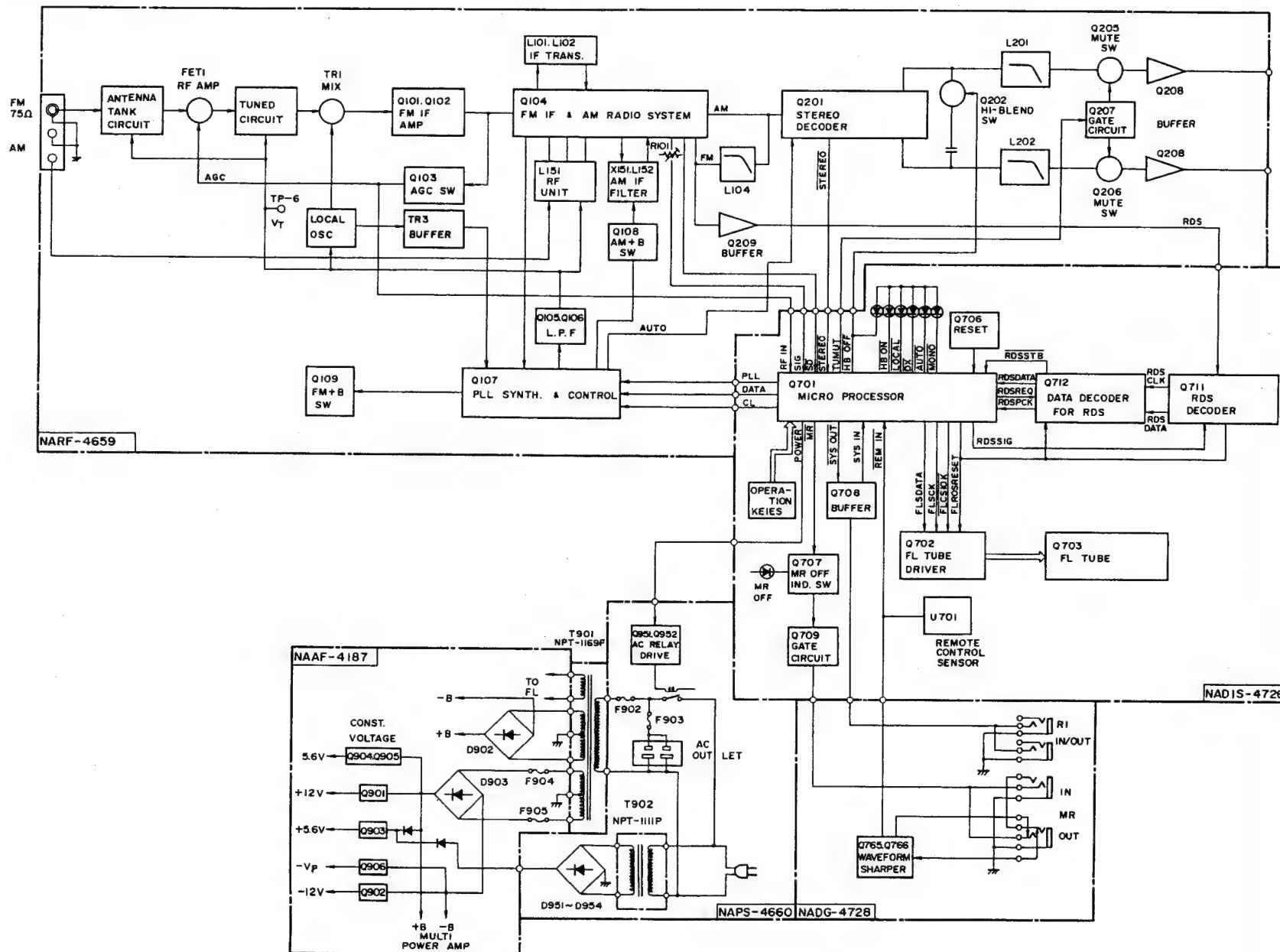


INPUT		OUTPUT		MODE
IN 1	IN 2	OUT 1	OUT 2	
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

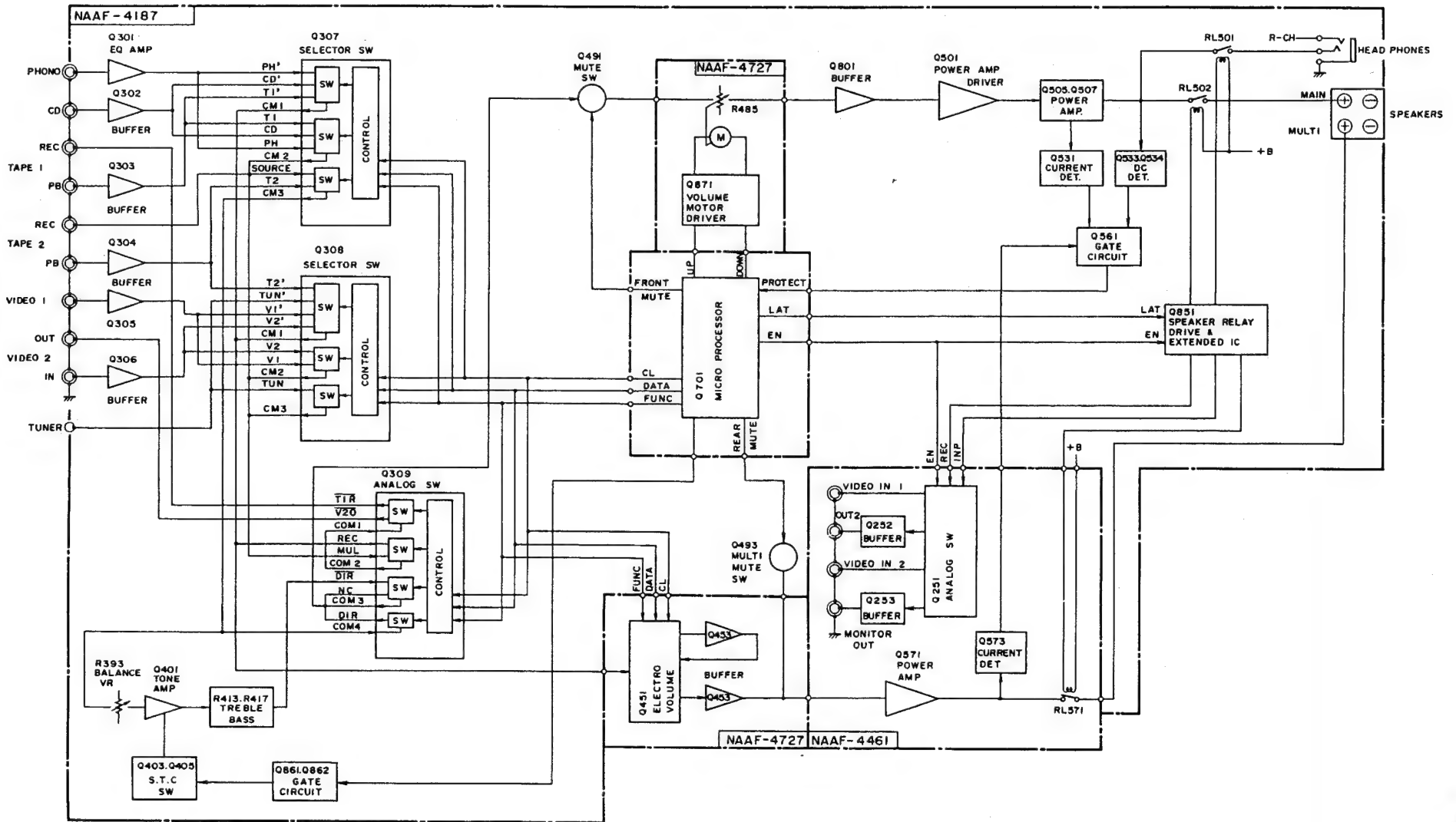
CCW: Counter clockwise direction
CW: Clockwise direction

BLOCK DIAGRAM

- TUNER SECTION -



— AMPLIFIER SECTION —



ADJUSTMENT PROCEDURE

• Preparation

1. Input

FM mono : 1 kHz, 75kHz devi., 60dB/ μ V

FM stereo : 1 kHz, 75kHz devi., 60dB/ μ V

Pilot signal 19kHz 7.5kHz devi.

AM : 400Hz 30% mod.

2. Outputs

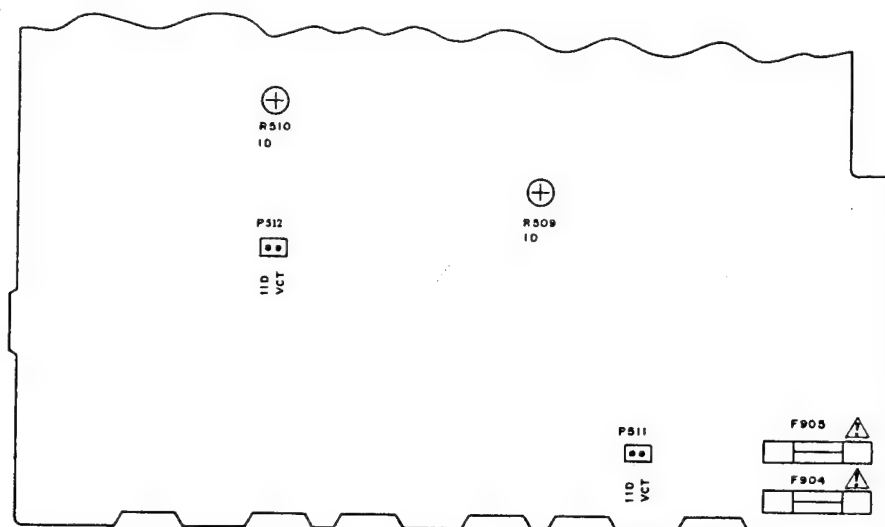
Connect the non-inductive type resistors of 8ohms to the main speaker, remote speaker, and rear speaker terminals unless otherwise noted.

4. Standard Knob Position

TAPE MONITOR 2OFF
 VOLUME.....Maximum
 BASS/TREBLE/BALANCE.....Center
 MUTING.....OFF
 REC SELECTOR.....SOURCE
 INPUT SELECTOR.....CD
 SPEAKERSON
 S.T.C.....OFF
 MULTI LEVEL0dB

5. Initializing of unit

1. Press and hold down the CD button, then press the POWER button.
2. "Test-" is displayed on the display for approximately 5 seconds.
3. While "Test-" is displayed, unplug the TX-8510Rs power cord from its AC outlet, then "Test-" will disappear.
4. Preset memory and parameters stored in memory, such as surround are initialized and will return to the factory settings.



SELECTOR AND POWER AMPLIFIER PC BOARD

Amplifier section

Idling Current Adjustment

Connect the DC voltmeter to the terminals P511 and P512 (VCT and IID) on the selector and power amplifier pc board. Adjust the trim resistors R509 and R510 so that the indicator of voltmeter becomes $5 \pm 0.5\text{mV}$.

NOTE: Adjust after switching on for 5 minutes.

FM section

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM IF/RF	1	Fig.1	99.1MHz 1kHz 75kHz devi. 65dBf(60dB)	—	99.1MHz	DC voltmeter	L101	$0 \pm 20\text{mV}$	FM MUTE/MODE switch:ON/STEREO Repeat the steps 1 and 3 until no further adjustment is necessary.
	2					AC voltmeter	IFT on the front end	Maximum	
	3					Distortion analyzer	L102	Minimum	
VCO		Fig.2	99.1MHz 1kHz 75kHz devi. 65dBf(60dB)	—	99.1MHz	Frequency counter	R201	$19\text{kHz} \pm 10\text{Hz}$	
Stereo Distortion		Fig.3	99.1MHz Ext. mod.65dBf(60dB)	Channel L or R 1kHz	99.1MHz	Distortion analyzer	IFT on the front end	Minimum	Don't turn more than $\pm 180^\circ$
Stereo Separation	1	Fig.3	99.1MHz Ext. mod. 65dBf(60dB)	Channel L 1kHz	99.1MHz	Channel R AC voltmeter	R202	Minimum	Maximum and same separation
	2			Channel R 1kHz		Channel L AC voltmeter		Minimum	
Muting Level		Fig.3	99.1MHz 19.2dBf(14dB)	—	99.1MHz	Oscilloscope	R101	Signal output	
Signal Level		Fig.4	99.1MHz 45dBf(40dB)	—	99.1MHz	DC voltmeter	R102	$2.2 \pm 0.07\text{V}$	
RDS		Fig.5	99.1MHz Ext. mod.40dB	RDS data or 57kHz 3% devi.	99.1MHz	Oscilloscope	R791	Maximum	

AM section

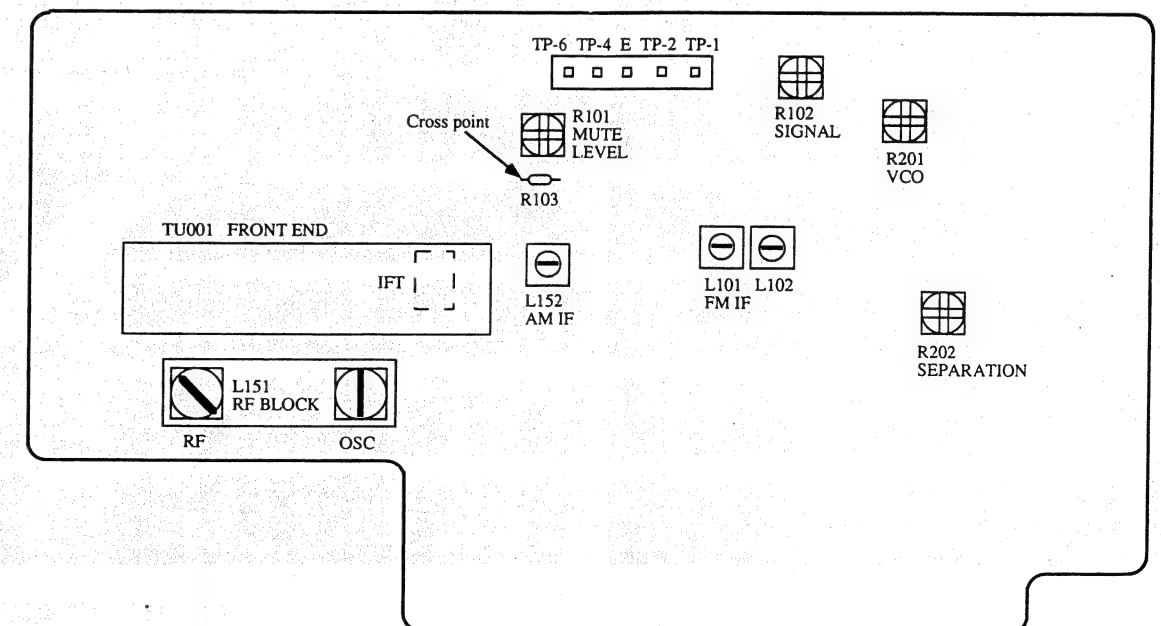
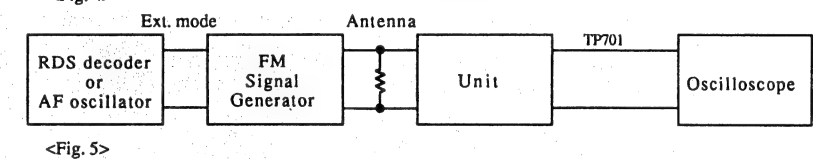
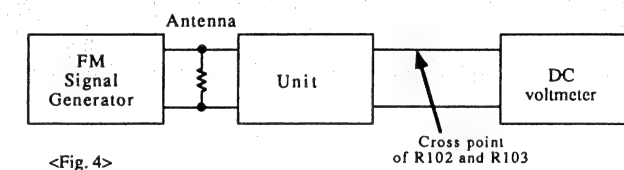
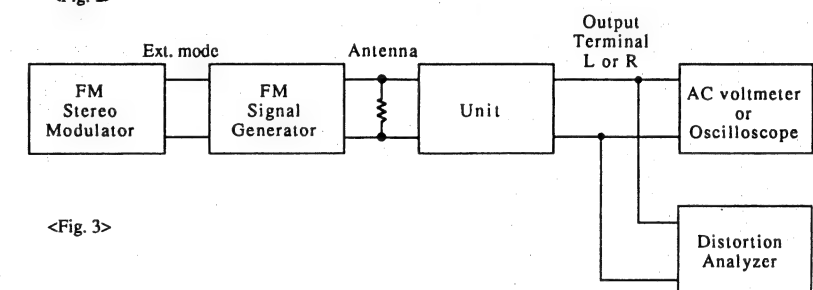
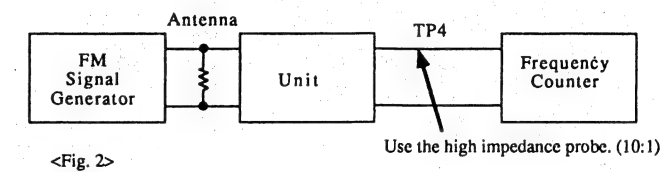
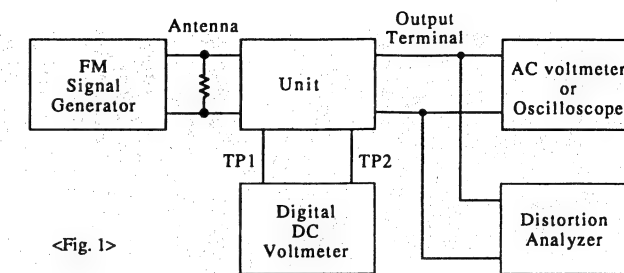
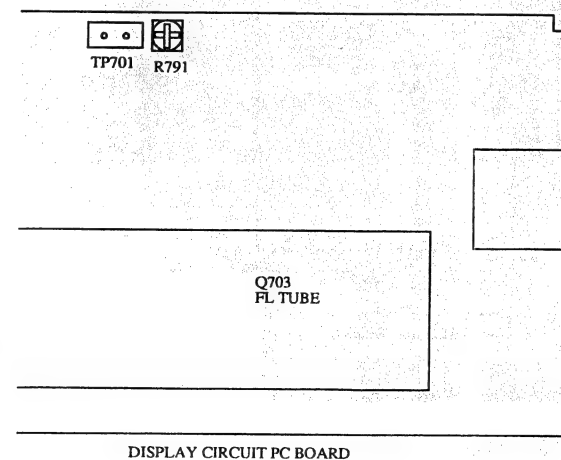
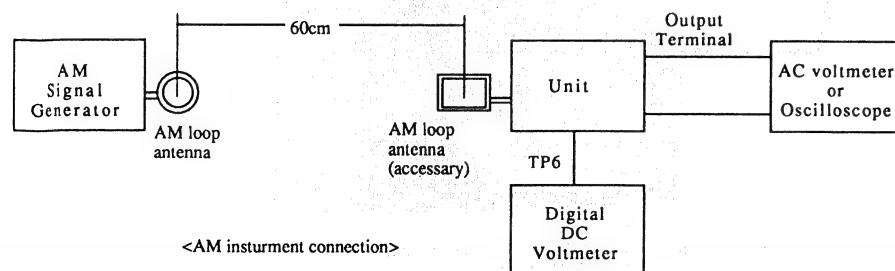
Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		522kHz	Digital DC voltmeter	OSC coil on RF block L151	$1.4 \pm 0.1\text{V}$
2	603kHz 400Hz 30% mod. 60dB/m	603kHz	AC voltmeter	RF coil on RF block L151	Maximum
3	990kHz 400Hz 30% mod. 60dB/m	990kHz	AC voltmeter	L152	Maximum

Reference Specification

FM tuned voltage:87.5MHz-108MHz

More than 1.3V-Less than 10V

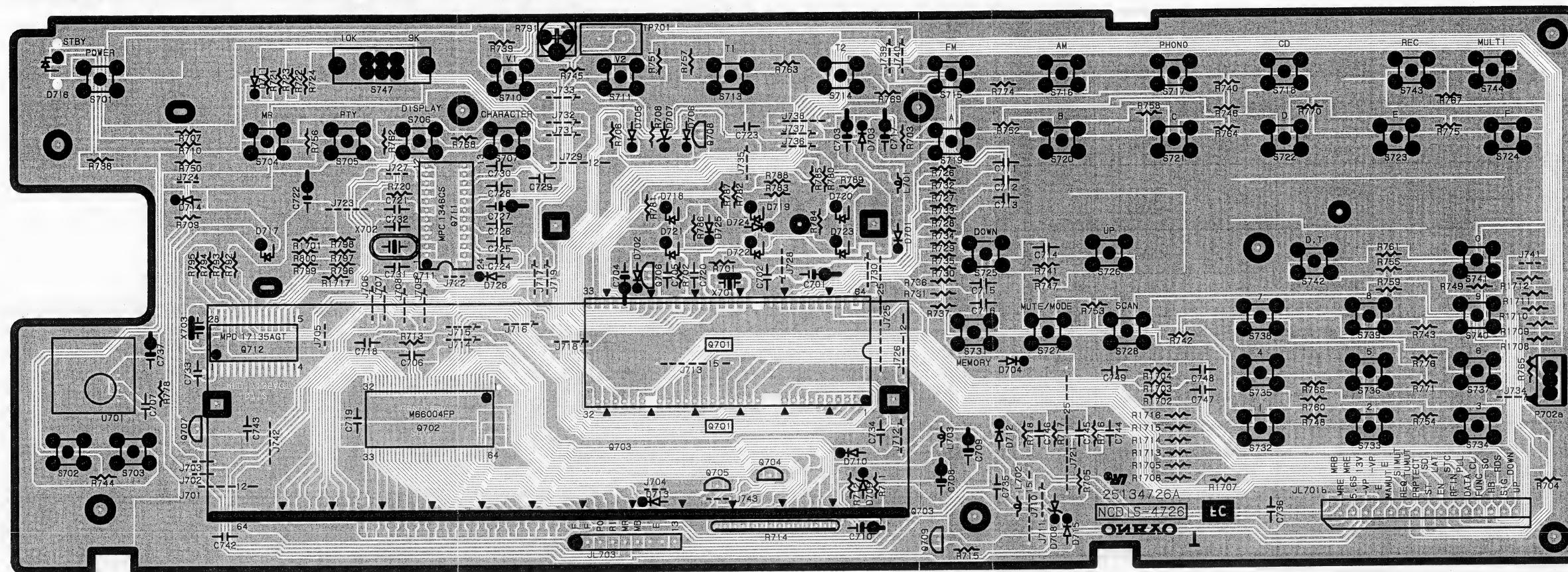
AM tuned voltage:522kHz-1611kHz

 $1.4 \pm 0.2\text{V}$ -Less than 9.0V

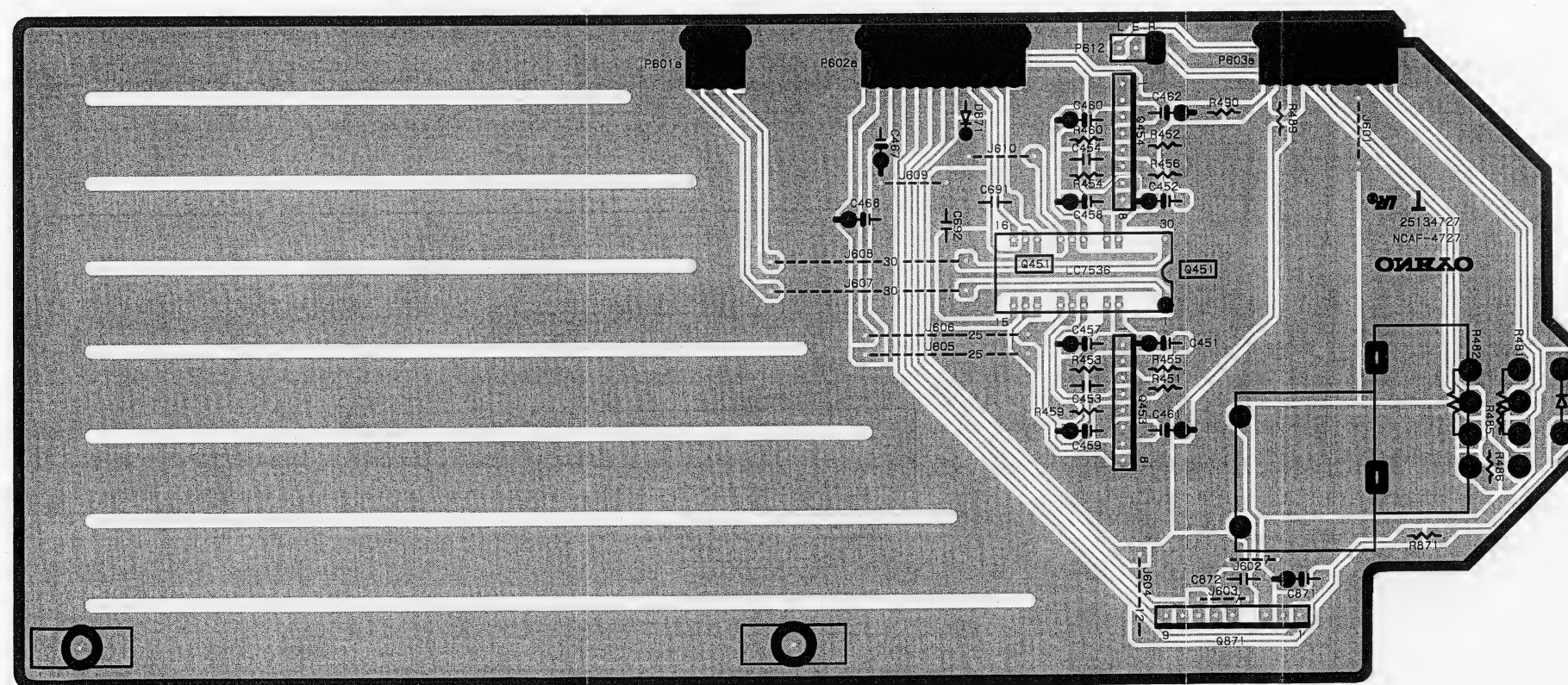
TX-8510R

TX-8510R

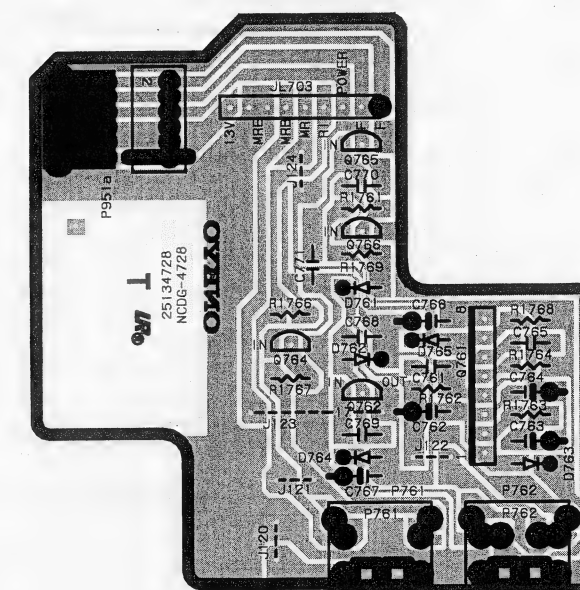
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



DISPLAY CIRCUIT PC BOARD



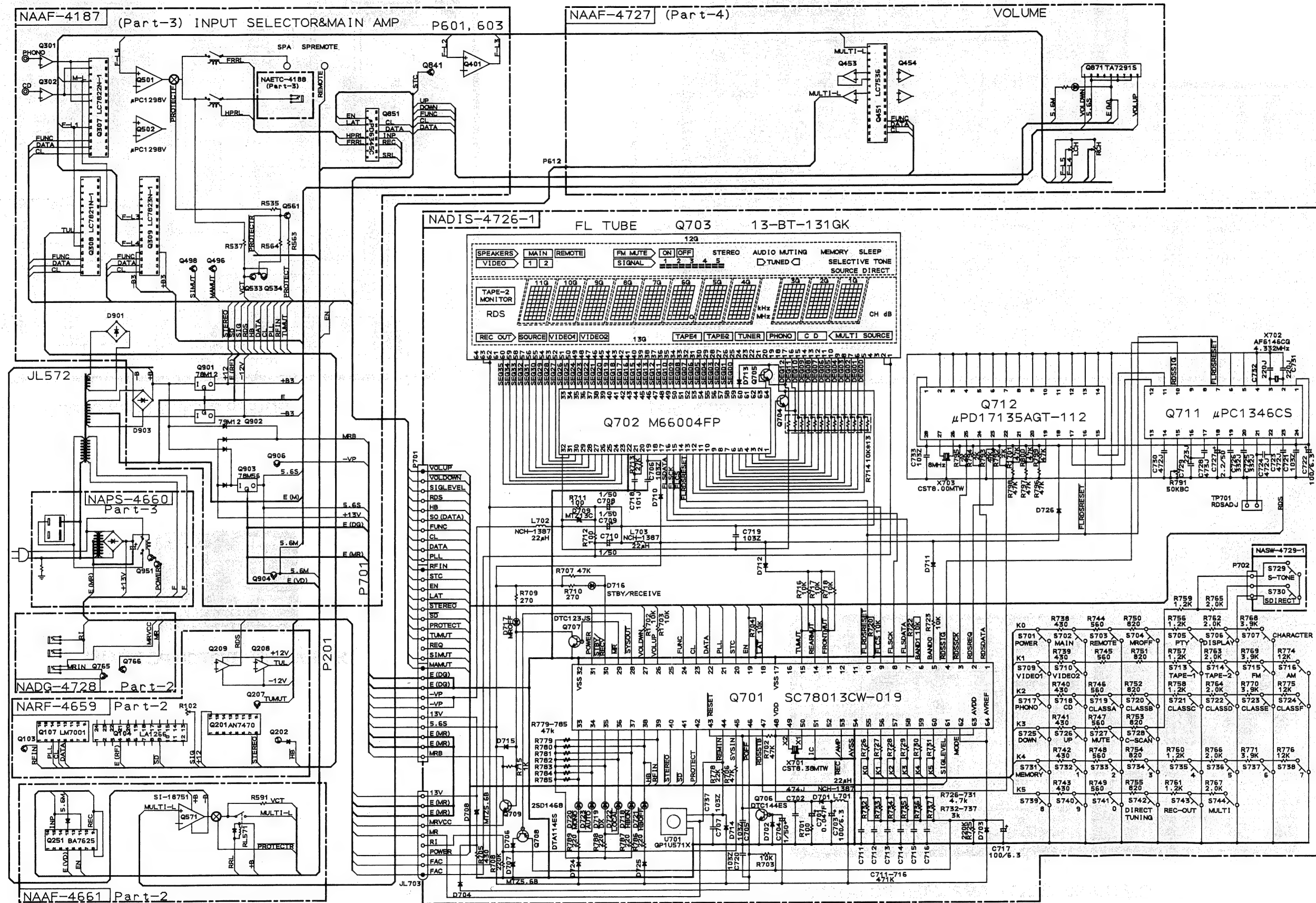
VOLUME CIRCUIT PC BOARD

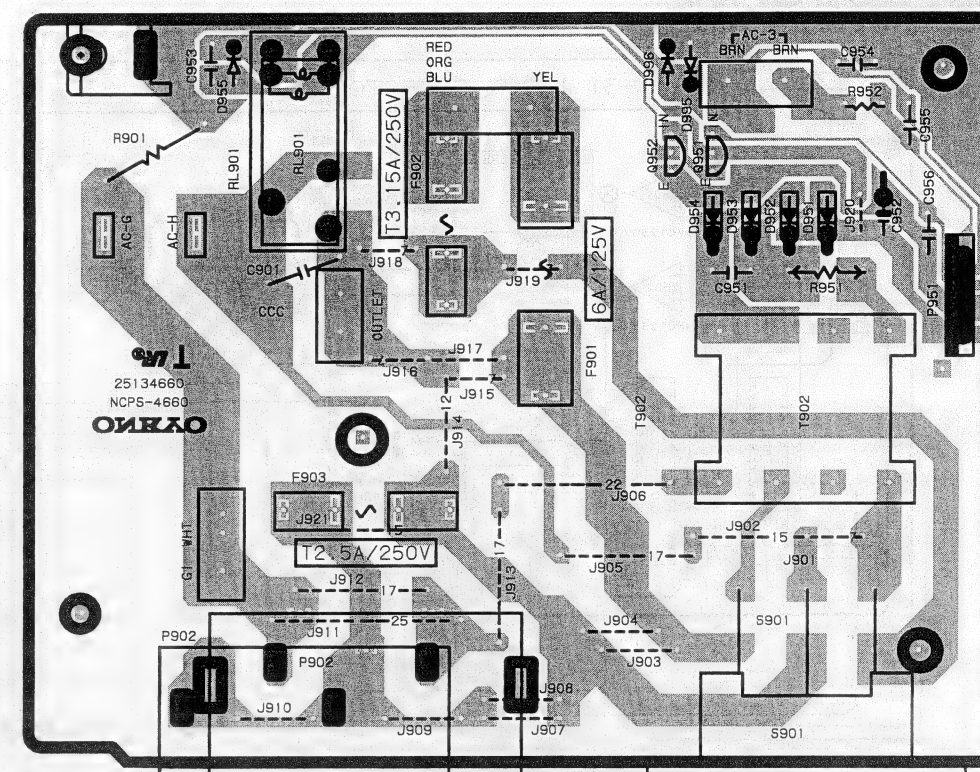


RI/mR TERMINAL PC BOARD

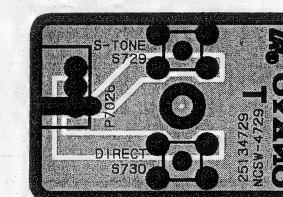
SCHEMATIC DIAGRAM PART 1

MICROPROCESSOR SECTION





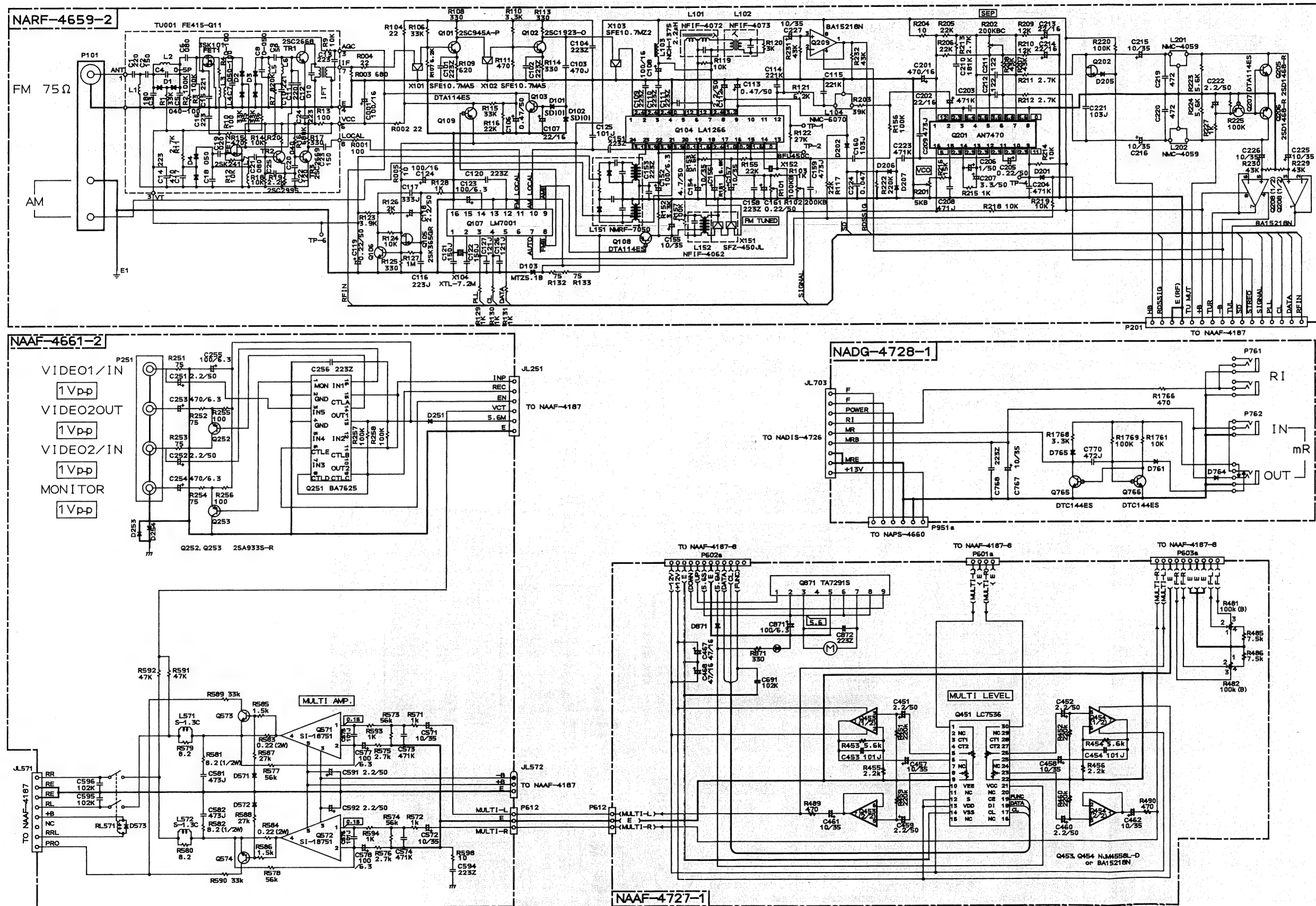
POWER SUPPLY CIRCUIT PC BOARD



VIDEO AND MULTI AMPLIFIER PC BOARD

SCHEMATIC DIAGRAM PART 2

TUNER AND VIDEO SECTION



TX-8510R



-31-

PRINTED CIRCUIT BOARD – PARTS LIST

SELECTOR AND POWER AMPLIFIER PC BOARD (NAAF-4187-8)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs			Diodes	
Q301	22240191	NJM4565D-D	D991-D994	223205 or	1SS270A or
Q302-Q306	22240247	BA15218N		223163	1SS133
Q307	22240270	LC7822N		Coils	
Q308	22240280	LC7821N	L501,L502	231176S	S-1.3C
Q309	22240339	LC7823N		Capacitors	
Q401,Q402	22240247 or	BA15218N or	C303,C304	354780229	2.2 μ F,50V,Elect.
	22240293	NJM4558L-D	C307,C308	354721019	100 μ F,6.3V,Elect.
Q501,Q502	22240311	μ PC1298V	C309,C310	374726224	6200pF \pm 5%,50V,Plastic
Q801	22240247	BA15218N	C311,C312	374721824	1800pF \pm 5%,50V,Plastic
Q851	22240211	μ PD6345C	C313,C314	354761009	10 μ F,35V,Elect.
Q901	222780122NEC	78M12	C315,C316	354744709	47 μ F,16V,Elect.
Q902	222790125	79M12	C401,C402	354761009	10 μ F,35V,Elect.
Q903	222780565JRC	78M56	C403,C404	354744709	47 μ F,16V,Elect.
	Transistors		C405,C406	374721534	0.015 μ F \pm 5%,50V,Plastic
Q403-Q406	2211945	2SK246-GR	C409,C410	374721534	0.015 μ F \pm 5%,50V,Plastic
Q491-Q494	2213631 or	RN1241-A or	C413-C416	374721044	0.1 μ F \pm 5%,50V,Plastic
	2213632	RN1241-B	C417-C420	374721024	1000pF \pm 5%,50V,Plastic
Q496,Q497	2213510	DTA114ES	C441,C442	354761009	10 μ F,35V,Elect.
Q503,Q504	2213284	2SC1740S-R	C491,C492	354761009	10 μ F,35V,Elect.
Q505,Q506	2201653,	☆ 2SC3856-O,	C501,C502	354761009	10 μ F,35V,Elect.
	2201654,	☆ 2SC3856-Y,	C507,C508	354742219	220 μ F,16V,Elect.
	2201655,	☆ 2SC3856-P,	C513,C514	374726834	0.068 μ F \pm 5%,50V,Plastic
	2202272 or	☆ 2SC3907-R or	C515,C516	374724734	0.047 μ F \pm 5%,50V,Plastic
	2202273	☆ 2SC3907-O	C517-C520	354700109	1 μ F,160V,Elect.
Q507,Q508	2201663,	☆ 2SA1492-O,	C533,C851	354721019	100 μ F,6.3V,Elect.
	2201664,	☆ 2SA1492-Y,	C801,C802	354761009	10 μ F,35V,Elect.
	2201665,	☆ 2SA1492-P,	C905,C906	3504244	10000 μ F,63V,Elect.
	2202262 or	☆ 2SA1516-R or	C909,C910	3504213	4700 μ F,35V,Elect.
	2202263	☆ 2SA1516-O	C913,C914	354761009	10 μ F,35V,Elect.
Q531-Q534	2211732 or	2SC1845-F or	C915	354751029	1000 μ F,25V,Elect.
	2211733	2SC1845-E	C917	354761009	10 μ F,35V,Elect.
Q561	2211792 or	2SA992-F or	C918	354761019	100 μ F,35V,Elect.
	2211793	2SA992-E	C919	354781019	100 μ F,50V,Elect.
Q861,Q905	221282	DTC144ES	C921	354754719	470 μ F,25V,Elect.
Q862	2213510	DTA114ES		Resistors	
Q904	2213830	DTB113ZS	R393	5104225	N11RGLC250KWT22Z,Balance
Q906	2213354	2SA933S-R	R407,R408	5104230	N14RLC100KWT22Z,Bass
	Diodes		R413,R414	5104230	N14RLC100KWT22Z,Treble
D401-D404	223205 or	1SS270A or	R509,R510	5210261	N06HR 5KBC,Trim
D501,D502	223163	1SS133	R515,R516	452530824	8.2 ohm,1/2W,Metal
D561	224450512	MTZ5.1B	R517,R518	451630824	8.2 ohm,1W,Metal
D851,D905	223205 or	1SS270A or	R519,R520	4000132Y	0.22 ohm \times 2,5W + 5W,Metal plate
D911,D912	223163	1SS133	R521,R522	452530824	8.2 ohm,1/2W,Metal
D901	22380038	RBV602	R523,R524	451630824	8.2 ohm,1W,Metal
D903	22380048	RBA402	R525-R528	452534794	0.47 ohm,1/2W,Metal
D904,D906	22380046 or	AM01Z or	R529,R530	441623914	390 ohm,1W,Metal oxide
D908,D909	22380035	GPI04003E	R531,R532	442522224	2.2 kohm,1/2W,Metal oxide
D907	224451302	MTZ13B	R903	442523304	33 ohm,1/2W,Metal oxide
D910	224452704	MTZ27D	R906	441721804	18 ohm,2W,Metal oxide
			R907	441721514	150 ohm,2W,Metal oxide

CAUTION: Replacement for transistor of mark ☆, if necessary, must be made from the same beta group (H \approx E) as the original type.

NOTE: THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors			Diodes	
R908	442524704	47 ohm,1/2W,Metal oxide	D710-D715	223205 or	1SS270A or
R911	442523314	330 ohm,1/2W,Metal oxide	D724-D726	223163	1SS133
R912	442522204	22 ohm,1/2W,Metal oxide	D716-D720	225142	SEL2913K,LED
	Relaies		D721-D723	225137CG,	SEL2413ECG,
RL501	25065396 or	NRL-2P1.25A-DC24-067 or		225137DG or	SEL2413EDG or
	25065470	NRL-2P1A-DC24-079		225137DY	SEL2413EDY
RL502	25065339	NRL-2P5A-DC24-046		Coils	
	Terminals		L701-L703	233411K220	NCH-1387
P301-P303	25045300	NPJ-6PDBL-159		Resonators	
P501	25060159	NTM-8PDMN085	X701	3010205	CST8.38MTW
	Plugs		X702	3010203	AF6146CG
P201	25055502	NPLG-16P477	X703	3010190	CST8.00MTW
P511,P512	25055493	NPLG-2P468		Capacitors	
P601	25055496	NPLG-4P471	C701	3000075	0.047F,5.5V,Super
P602	25055500	NPLG-12P475	C702	375524744	0.47 μ F \pm 5%,50V,Plastic
P603	25055499	NPLG-10P474	C703,C717	353721019	100 μ F,6.3V,Elect.
	wire trap		C704	353780109	1 μ F,50V,Elect.
JL701A	25050727	NSCT-30P531	C708-C710	353780109	1 μ F,50V,Elect.
	Fuses		C722	353721019	100 μ F,6.3V,Elect.
F904,F905	252078	Δ 5A-SE-EAK	C723,C724	374724724	4700pF \pm 5%,50V,Plastic
	Fuseholders		C725,C726	374723324	3300pF \pm 5%,50V,Plastic
F904A,F905A	25050065	Δ YSH403T	C727	353780229	2.2 μ F,50V,Elect.
	HEADPHONE TERMINAL PC BOARD (NAETC-4188-8)		C728	374724734	0.047 μ F \pm 5%,50V,Plastic
CIRCUIT NO.	PART NO.	DESCRIPTION	C729	374722234	0.022 μ F \pm 5%,50V,Plastic
P504	25045255	YKB26-5009,Headphone terminal	C730	374724724	4700pF \pm 5%,50V,Plastic
	DISPLAY CIRCUIT PC BOARD (NADIS-4726-1)			Resistors	
CIRCUIT NO.	PART NO.	DESCRIPTION	R714	49163103413	10 kohm \times 13,1/10W,Array
	Remote control sensor		R791	5210265	N06HR 50KBC,Trim
U701	24130007	GPIU571X		Switches	
	FL tube		S701-S707	25035548	NPS-111-S510
Q703	212120	13-BT-131GK	S710,S711	25035548	NPS-111-S510
	ICs		S713-S728	25035548	NPS-111-S510
Q701	22240695	SC78013CW-019	S731-S744	25035548	NPS-111-S510
Q702	22240685R9	M66004FP		Wire trap	
Q711	22240679	μ PC1346CS	JL701B	25050728	NSCT-30P532
Q712	22240639A	μ PD17135AGT-112		Plug	
	Transistors		P702A	25055510	NPLG-3P485
Q704,Q705	2213284	2SC1740S-R		Holders	
Q706	221282	DTC144ES		27190842AY	FL tube
Q707	2213640	DTC123JS		27190843	Stand-by
Q708	2213510	DTA114ES		VOLUME CIRCUIT PC BOARD (NAAF-4727-1)	
Q709	2212794	2SD1468-R		CIRCUIT NO.	PART NO.
	Diodes			ICs	DESCRIPTION
D701-D706	223205 or	1SS270A or	Q451	22240468	LC7536
	223163	1SS133	Q453,Q454	22240247 or	BA15218N or
D707,D708	224450562	MTZ5.6B		22240293	NJM4558L-D
D709	224450913	MTZ9.1C	Q871	22240239	TA7291S

NOTE: THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diode	
D871	223205 or 223163	1SS270A or 1SS133
	Capacitors	
C451,C452	354780229	2.2 μ F,50V,Elect.
C457,C458	354761009	10 μ F,35V,Elect.
C459,C460	354780229	2.2 μ F,50V,Elect.
C461,C462	354761009	10 μ F,35V,Elect.
C467,C468	354744709	47 μ F,16V,Elect.
C871	354721019	100 μ F,6.3V,Elect.
	Resistor	
R481,R482	5142006A	N16RGL100KBT25F,Variable
	Sockets	
P601A	25050443	NSCT-4P267
P602A	25050447	NSCT-12P271
P603A	25050446	NSCT-10P270
P612	2000589AULY	NSAS-6P545

RI/MR TERMINAL PC BOARD (NADG-4728-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q765,Q766	221282	DTC144ES
	Diodes	
D761	223205 or	1SS270A or
D764,D765	223163	1SS133
	Capacitors	
C767	354761009	10 μ F,35V,Elect.
C770	374724724	4700pF \pm 5%,50V,Plastic
	Jacks	
P761	25045172	HSJ-1003-01-020
P762	25045293	HSJ-1003-01-012
	Socket	
P951A	25050444	NSCT-6P268

OPERATION SWITCH PC BOARD (NASW-4729-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
S729,S730	25035548	NPS-111-SS10,Switch
P702B	25050454	NSCT-3P278,Socket

TUNER CIRCUIT PC BOARD (NARF-4659-2)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end	
TU001	240089	FE415-G11
	ICs	
Q104	22240039	LA1266
Q107	22240090	LM7001
Q201	22240242	AN7470
Q208,Q209	22240247 or 22240293	BA15218N or NJM4558L-D

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q101	2210746	2SC945A-P
Q102	2211723	2SC1923-O
Q103,Q106	2213284	2SC1740S-R
Q105	2212445	2SK365-GR
Q108,Q109	2213510	DTA114ES
Q202	2211945	2SK246-GR
Q205,Q206	2212794	2SD1468-R
Q207	2213510	DTA114ES
	Diodes	
D101,D102	223191	SD101
D103	224450512	MTZ5.1B
D201,D202	223205 or	1SS270A or
D205-D207	223163	1SS133
	Transformers	
L101	233401	NFIF-4072
L102	233402	NFIF-4073
L151	232148	NMRF-7050,RF block
L152	232139	NMIF-4062
	Coils	
L103	233411M022	NCH-1375
L104	233383	NMC-6070
L201,L202	233355A	NMC-4059
	Ceramic filters	
X101,X102	3010071	SFE10.7MA5
X103	3010130	SFE10.7MZ2A
X151	3010123	SFZ-450JL
X152	3010076	BFU-450C
	Resonator	
X104	3010158 or 3010141	XTL-7.2M, Crystal
	Capacitors	
C001	354741019	100 μ F,16V,Elect.
C106,C113	354784799	0.47 μ F,50V,Elect.
C107,C202	354742209	22 μ F,16V,Elect.
C108,C124	354741019	100 μ F,16V,Elect.
C112,C118	354780229	2.2 μ F,50V,Elect.
C117	374723334	0.033 μ F \pm 5%,50V,Plastic
C119	354782299	0.22 μ F,50V,Elect.
C123,C152	354721019	100 μ F,6.3V,Elect.
C154	354780479	4.7 μ F,50V,Elect.
C155-C157	354761009	10 μ F,35V,Elect.
C159	374724734	0.047 μ F \pm 5%,50V,Plastic
C160,C221	374721034	0.01 μ F \pm 5%,50V,Plastic
C161,C205	354782299	0.22 μ F,50V,Elect.
C201	354744719	470 μ F,16V,Elect.
C206	354780109	1 μ F,50V,Elect.
C207	354780339	3.3 μ F,50V,Elect.
C208	370134714	470pF \pm 5%,100V,Plastic
C209,C224	374724734	0.047 μ F \pm 5%,50V,Plastic
C211,C212	374721224	1200pF \pm 5%,50V,Plastic

NOTE: THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C213,C214	354742209	22 μ F,16V,Elect.
C215,C216	354761009	10 μ F,35V,Elect.
C219,C220	374724724	4700pF \pm 5%,50V,Plastic
C222	354780229	2.2 μ F,50V,Elect.
C225-C227	354761009	10 μ F,35V,Elect.
	Resistors	
R101	5210266	N06HR100KBC,Trim
R102,R202	5210267	N06HR200KBC,Trim
R201	5210261	N06HR5KBC,Trim
	Terminal	
P101	25060117	NTM-2PDMN051,Antenna
	Socket	
P201	25050449	NSCT-16P273
	Shield plate	
	27150356Y	

POWER SUPPLY CIRCUIT PC BOARD (NAPS-4660-2)

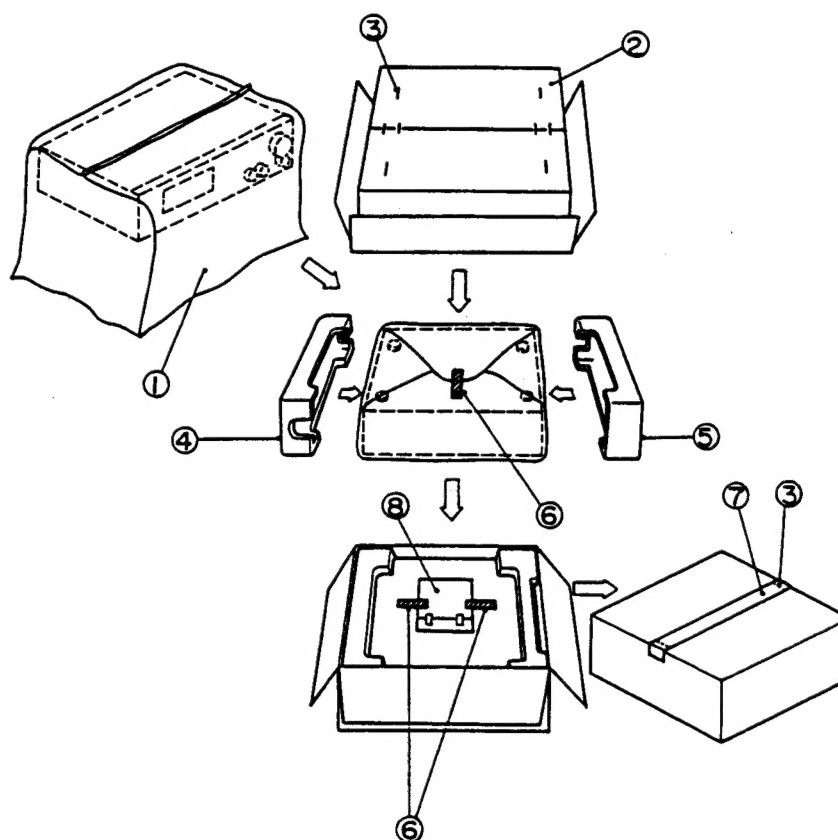
CIRCUIT NO.	PART NO.	DESCRIPTION
Q951	221282	DTC144ES,Transistor
Q952	2213650	DTD113ZS,Transistor
D951-D954	22380046 or	AM01Z or
	22380035	GP104003E,Diode
D955	223205 or	1SS270A or
D995,D996	223163	1SS133,Diode
C901	3500065AY Δ	DE7150FZ103P/AC400V/125V
		Capacitor IS
C952	354761009	10 μ F,35V,Elect. capacitor
R951	452530824	8.2 ohm,1/2W,Metal resistor
RL901	25065248 Δ	NRL-1P15A-DC12-29,Relay
T902	2300671Y Δ	NPT-1111P,Power transformer
F902	252076 Δ	3.15A-SE-EAK,Fuse
F903	252075 Δ	2.5A-SE-EAK,Fuse
F902A,F903A	25050065 Δ	YSH403T,Fuseholder
P902	25050640 Δ	NSCT-4P451,AC outlet
P951	25055497	NPLG-6P472,Plug

VIDEO AND MULTI AMPLIFIER PC BOARD (NAAF-4661-2)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q251	22240373	BA7625
Q571,Q572	22240467	SI-18751
	Transistors	
Q252,Q253	2213354	2SA933S-R
Q573,Q574	2211732 or	2SC1845-F or
	2211733	2SC1845-E
	Diodes	
D251	223205 or	1SS270A or
	223163	1SS133
D571-D573	223205 or	1SS270A or
	223163	1SS133

CIRCUIT NO.	PART NO.	DESCRIPTION
	Coils	
L571,L572	231176	S-1.3C
	Capacitors	
C251,C252	354780229	2.2 μ F,50V,Elect.
C253,C254	354724719	470 μ F,6.3V,Elect.
C255	354721019	100 μ F,6.3V,Elect.
C571,C572	354761009	10 μ F,35V,Elect.
C577,C578	354741019	100 μ F,16V,Elect.
C579,C580	374724734	0.047 μ F \pm 5%,50V,Plastic
C591,C592	354780229	2.2 μ F,50V,Elect.
	Resistors	
R581,R582	452530824	8.2 ohm,1/2W,Metal
R583,R584	4000129Y	0.22 ohm \times 2,2W+2W,Metal plate
	Relay	
RL571	25065339	NRL-2P5A-DC24-046
	Plug	
P612A	25055133	NPLG-3P117
	Wire trap	
JL251	25050270	NSCT-6P98
JL571	25050272	NSCT-8P100
JL572	25050267	NSCT-3P95

PACKING VIEW



REF.NO.	PART NO.	DESCRIPTION
1	29100034A	Styrene bag for unit
2	29052844Y	Master carton box
	29052845Y	Master carton box<S>
3	282301	Staple
4	29091449C	Pad R
5	29091448C	Pad L
6	261504	Adhesive tape
7	29110071	PP tape
8	Accessory bag ass'y	
	29342043Y	Instruction manual
	2010200	Connection cord
	3010054	UM-3,Two batteries
	24140250Y	RC-250S,Remote control transmitter
	292112	FM antenna
	232140	NMA-3057,AM loopantenna
	29365020H	Warranty card
	29100097	Styrene bag for accessory
	29100094B	Styrene bag for warranty card

NOTE : : Back model only
<S> : Silver model only

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